DETERMINING THE VALUE OF AUTOMATION IN COMMERCIAL AND USAF SUPPLIER EVALUATION SYSTEMS

THESIS

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Abstract

The US Air Force has determined that improving the way we manage our supply chain is key to reducing operating costs and subsequently providing better support to the warfighter. One method of improving supply chain management is to streamline the way suppliers are evaluated. This study compared the efforts of private industry with government program offices in terms of supplier evaluation techniques. The expert panel from private companies was identified because of their association with the aerospace industry. Government employees were identified because of their recent contract pre-award and post-award experience. Input was received through the use of open-ended interview questions and was later analyzed for content. Pattern matching analysis was used to determine the best practices of private and government entities and to determine the differences between government and private industry in terms of their supplier evaluation techniques. The findings of the study did not mention the names of those interviewed but rather the organization they were associated with.

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I. Introduction

Chapter Overview

This chapter describes the fundamental motivation for my research. It provides

background information to explain the history of the subject, an explanation of the

research objectives, the primary research questions, and the investigative questions. It

concludes with a brief description of the methodology used and the scope and limitations

of the study.

Background

The development of automated supplier rating systems has gained popularity in

the civilian marketplace over the last few years. Based on the increase of electronic

media in the business-to-business environment it has become essential to modify

traditional supply chain management (SCM) practices in the commercial sector. The

USAF acquisition community is currently studying Purchasing and Supply Chain

Management (PSCM) as a means to improve its own supply chain. One of the ultimate

goals of PSCM is to improve the supplier selection process. Two suppliers, which sell

the same product with the same specifications and terms, rarely perform at the same level

(Smith, 2000:40). Many commercial activities have implemented rating scales (e.g.,

gold, silver bronze) to evaluate supplier performance in a more timely fashion.

Problem

My research focuses on four of PSCM's 13 key tenets. They include: 1) the automation of routine activities, 2) better management of key suppliers, 3) understanding the supply chain, and 4) rationalizing the supply base. It appears that the private sector has devised many new strategies for success. The use of automated supplier evaluation techniques continues to increase in private industry. For the most part, the USAF acquisition community continues to use time-consuming evaluation techniques in assessing a supplier's performance. This research intends to examine why such a gap exists and provides recommendations on how to close it.

Research Objectives

There are five primary objectives in my research: 1) comparing supplier evaluation methods of commercial companies with that of the United States Air Force (USAF) acquisition community, 2) investigating the success of automated evaluations in the commercial sector, 3) determining best practices for evaluating suppliers in the commercial market, 4) determining what ratings can be quantified during an evaluation, and 5) determining if the Federal Acquisition Regulation (FAR) will prohibit USAF acquisition personnel from transforming the supplier evaluation process.

Research/Investigative Questions

This thesis presents an alternative to the current process. The ultimate goal is to explore whether "commercial" supplier evaluation methods can replace the USAF acquisition pre-award and post-award processes. Further, the objective is to determine

which commercial evaluation methods are most successful in selecting the most competent and timely suppliers.

My thesis research question is:

Can USAF acquisition personnel use supplier ratings in lieu of conducting award-fee boards or past performance evaluations?

The investigative questions I will attempt to answer are:

1. What are the similarities between USAF rating categories and commercial rating categories? (These are the factors which are used in award-fee determinations and past performance evaluations)

2. Can cost avoidance savings be quantified if either were replaced?

3. What acquisition reform initiatives or regulations would aid or hinder USAF application?

Methodology

This research is being conducted as a case study. The case study includes content analysis of the interview responses of eight senior managers from commercial companies in the aerospace or air transportation industries, and two senior managers from government program offices. The interview instrument was devised of questions which map to the research and investigative questions mentioned previously. Of the 31 questions, 21 were asked to both government personnel and company representatives, 6 were asked to commercial companies only, and 4 were asked to government only.

The content analysis was aided by the statistical software StatPac. After interviewing all ten personnel, the responses were transcribed and transferred into StatPac. The statistical

information from StatPac provided the framework for the conclusions and

recommendations presented in chapter 5.

Scope and Limitations of the Research

A case study limits the finding to the cases under study. In this study only

program offices from Aeronautical System Center, Wright-Patterson Air Force Base, OH

were interviewed. Many of the generalizations about USAF acquisition become difficult

when trying to distinguish between product center, depot, and operational buying units.

The findings of my research hope to encourage innovative thinking and more efficient

methods for evaluating suppliers.

II. Literature Review

Effort Without Stratification

Pre-award and post-award supplier evaluations require extensive amounts of time for USAF acquisition personnel. During the pre-award evaluation period, contracting officers and members of the past performance evaluation team send out surveys and research contractor past performance data to determine which offerors are most capable of meeting the government requirement. This process can take as long as six months. The current processes for pre-award and post-award collection are too cumbersome in today's acquisition environment (Beasoleil, 2000:28). More often than not, the performance risk assessment team (PRAG), which is responsible for pre-award evaluations during source selections, does not establish discriminators between offerors. As a result, the PRAG team is overshadowed by the technical and cost portions of the source selection. Businesses that deal with the federal government feel that the Federal Acquisition Regulation allows too much latitude to evaluators, resulting in inconsistent evaluation factors among federal agencies (Clipsham, 1998:31). Additionally, during post-award reviews, the Award-fee Board (AFRB), which often includes the contracting officer, the program manager, and the logistics manager, requires continuous monitoring of the contractor/supplier in order to determine the award-fee earned. This process typically takes 30 to 60 days. As a result, the contractor is not paid until three months after the work is performed. A recent contracting officer survey reported that award-fees are generally assessed at 80% to 95% of the allotted award-fee pool (Snyder, 2001:13).

This percentage is extremely high for the amount of work and effort expended during the 30 to 60 day evaluation. These processes are often successful, but at what expense?

<u>USAF Acquisition Reform</u>

This study attempts to work within the constraints of the Competition in Contracting Act of 1984 while attempting to push the boundaries of the "transformation" movement within DoD. "Transformation" describes the harnessing of innovative organizational changes to enhance efficiency and effectiveness (SECDEF, 2002). Transformation in the USAF acquisition community involves strategic sourcing. An improved supplier selection procedure is part of strategic sourcing. Transformation is a cultural change . . . finding people who think right, who are not stuck in the past and who are willing to look at things from a new perspective (SECDEF, 2002).

Based on efforts to improve USAF procurement processes, the office of the Undersecretary of the Air Force for Installation and Logistics (AF/IL) has tailored its own version of the PSCM movement. PSCM consists of thirteen key tenets: 1) align purchasing strategies with enterprise goals, 2) gain knowledge of where the enterprise's money is spent, 3) break down functional stovepipes, 4) focus workforce on strategic objectives, 5) select sources based on strategic value, 6) understand supply chain, 7) manage key suppliers, 8) rationalize supply base, 9) cultivate long-term supply base, 10) automate routine activities, 11) link demand planning with purchasing strategies, 12) design supply chains for optimum effectiveness, and 13) relentlessly pursue continuous improvement (AF/IL Briefing, 2002). My research touches on areas 3-10. Specifically, my research includes supplier qualifications and certifications (Cook & Graser, 2001:92-

99). In general, qualification and certification involves a thorough review of a supplier's internal processes, financial records, and quality control standards.

The PSCM movements stem from the "lean aerospace initiative" which proposes to cut the costs of acquiring future systems by 50%, while increasing the performance and quality (Baker, 1998:22). Optimizing the supplier base expedites the transformation process. PSCM attempts to improve supplier performance (i.e., better supplier selection) by maintaining a smaller pool of high quality suppliers. The primary motives for reducing the number of suppliers a company has is to achieve: 1) higher quality, 2) ensure timely delivery, and 3) to lower purchasing costs (Piercy and Cravens, 1997:74). This concept is linked to the idea of strategic sourcing, which is the corporate decision to integrate purchasing and supply personnel into teams which select the firms most capable of meeting the government requirement. The assumption is that the USAF can achieve this by implementing commercial practices.

DoD Efforts and Background

Past performance information is relevant information, for future source selections regarding a contractor's actions under previously awarded contracts. It includes, for example, the contractor's record of conforming to contract requirements and to standards of good workmanship…of forecasting and controlling costs…[of] adherence to contract schedules, including the administrative aspects of performance…of reasonable and cooperative behavior and commitment to customer satisfaction; and generally, the contractor's business-like concern for the interest of the customer (Federal Acquisition Regulation (FAR): 42.1501).

Pre-Award: A review of the literature indicates that NASA was the first government agency to implement award-fee contracts and, is the only government agency currently using supplier ratings for pre-award evaluation (Snyder, 2001:15). NASA uses a scorecard rating system based on input from purchasing personnel to predict performance on future contracts.

The Air Force attempted to use a performance rating system at the Air Logistics Center depots in 1996. It was known as the Blue Ribbon Program (BRP) (Ambrose, 1997:26). It was a best value award system, which authorized contracting officers to award contracts based on factors deemed more important than price. It was a certification rating designed to assess performance on two factors: quality and timely delivery. Contractors were designated "blue ribbon certified" and their credentials for producing designated aircraft parts were continuously monitored.   Theoretically, if the BRP firm was within 20% of the lowest bidder, it could be awarded the contract based on past performance (Ambrose, 1997:27). The program failed. The Air Force cancelled the program because it required excessive documentation for contracting officers (Ambrose, 1997:27). The strict documentation policy was necessary to comply with the full-and-open competition requirement of the CICA (Ambrose, 1997:15). CICA was established to prevent exclusion, and to ensure that all offerors are afforded the same opportunity to compete for business. This Act is worthwhile in principle, but troublesome for acquisition managers. Contracting Officers are often inundated with paperwork for award fee boards and past performance evaluations.

The Navy also implemented a program known as the Blue Star Program. This program was also based on quality and timely delivery. The difference between this and

the BRP was that it did not give preference to its recipients. Blue Star Contractors viewed this program as bragging rights among their competitors. The Navy put this program on hold while focusing on a supplier rating system using a Contractor Report Card (Ambrose, 1997:28).

The Army instituted a similar system known as the Army Contractor Performance Certification Program (CP2). It was designed to emphasize quality. The benefits of this program were difficult to assess, although it did allow for less oversight and lower inspection costs (Ambrose 1997:29). The CP2 was phased out because of the administrative requirements of keeping it up to date.

Current guidance on past performance assessments is included in the DoD Past Performance Guide (PPG) of 2001 (Version 2). This document outlines the performance areas that are to be evaluated during pre-award.

> "The past performance factors and subfactors, if any, should be designed
> to evaluate the key performance requirements of the contract solicitation.
> At a minimum, the solicitation should request the offeror's record for on
> time delivery, technical quality, cost control, and past performance of
> subcontracting plans/programs " (PPG, 2001:10).

The categories for performance ratings include: Unsatisfactory/Very High Performance Risk, Marginal/High Performance Risk, Satisfactory/Moderate Performance Risk, Very Good/Low Performance Risk, Exceptional/Very Low Performance Risk, and Unknown Performance Risk (PPG, 2001:10).

Post-Award: Research and case-study analysis of award-fee contracts date back to the McNamara days of the 1960's. While award-fee contracts do not themselves contain supplier performance ratings, they do include factors which determine the monetary

incentive offered to the supplier encouraging the supplier to meet or exceed the contract requirements (Snyder, 2001:15).

Current guidance for USAF post-award evaluations is included in the 2001 Air Force Materiel Command Award-Fee Guide. The following evaluation areas are included as a sample.

Figure 1. AFMC Award-Fee Guide (2000:83)

Performance Category
COST AND SCHEDULE MANAGEMENT
COST CONTROL
COST CONTROL/REPORTING
COST PERFORMANCE
ORGANIZATION AND MANAGEMENT
PROGRAM MANAGEMENT
QUALITY ASSURANCE
QUALITY OF WORK
PRODUCT QUALITY
TECHNICAL PERFORMANCE
TIME OF DELIVERY
SCHEDULE

The award-fee board members assign a grade of Unsatisfactory, Satisfactory, Good, Very Good, or Excellent performance after evaluating a contractor (AFMC Award-fee Guide, 2000:81). Each category is weighted in establishing a grade scale of 0 to 100. As mentioned previously, these scores are generally very high (80% - 95%).

Air Force Audit Findings

The Air Force Audit Agency conducted an audit of 17 award-fee contracts in 1991. The findings included: 1) award-fee contract types lend themselves to a subjective as opposed to an objective review; 2) contracting personnel did not establish an appropriate methodology for assessing performance in 13 of the 17 instances (Snyder, 2001:17). The opinion that supplier performance ratings in civilian industry are subjective does not differ from the findings of the AFAA. The industry applications encountered below, include objective, as well as subjective ratings.

Industry Solution

Industry has struggled with supplier management just as the USAF has. During the production of the Boeing 747 and 737 airplanes, Boeing supplier failure cost over $1B (Park et al., 2001:696). To solve problems like these, many commercial firms have devised a paperless media for tracking their suppliers. Supplier rating systems are growing in popularity in the civilian marketplace. Many commercial firms use software driven performance ratings that combine qualitative and quantitative measures. One example of the software driven system is Open Ratings (OR). OR gathers opinion data, transaction data, and third-party financial data information from Dun & Bradstreet in computing the overall score (OpenRatings.com, 2002). More specifically, the OR system measures overall performance based on reliability, cost, order accuracy, delivery-timeliness, quality, business relations, personnel, customer support, and responsiveness. Supply chain managers use the database information to choose between multiple suppliers. In effect, the software is now the predictor for determining the outcome of a contract in a quantifiable manner (Smith, 2000:40). By referring to the real-time ratings,

companies can predict good vs. bad partners. This system allows the buyer to shorten the

pre-award evaluation and to substitute award-fee boards with percentages awarded

according to the Standard Industrial Code (SIC). The SIC code informs the buyer what

type of work a supplier is capable of performing. A sample report from Open Ratings

(Attachment 1) is included. I have also included a scorecard from UTC which shows the

ratings for a particular firm across each division of UTC (Attachment 2).

FedEx also has a software generated system in-place. FedEx's system was

chosen as they are a leader in the airborne logistics industry. I conducted an interview

with one of FedEx's strategic sourcing managers, Joseph K. Clark, to discuss FedEx's

supplier management program. FedEx's evaluation categories include strategy,

resources, process, optimization, and globalization (Clark). Their system was built by

purchasing personnel at corporate headquarters in Memphis, TN. FedEx's management

assigns accountability to purchasing and logistics personnel when selecting suppliers.

Using accountability in purchasing terms, it represents purchasing's responsibility to

achieve pre-determined goals and attaining performance thresholds (Zsidisin and Ellram,

2001:631).

The database at FedEx addresses past performance evaluations and post-award

considerations as well. During contract generation, a clause explains the balanced

scorecard system to the vendor. There are five categories at FedEx: Unacceptable,

Bronze, Silver, Gold, and Platinum. For instance, if the vendor agrees to a 3% award-fee

for subsequent years, they will get that with a silver rating. If they achieve a gold rating,

they receive a 3.5% award-fee during that year. If they remain at bronze or below, they

will receive 2.5% or less (Clark).

Buyer/Supplier Relations

Supplier selection is the primary task for purchasing managers (Monczka et al., 2002:222-265). This task is becoming more complex in the global business environment today because selection decisions are now strategic and include analysis based on total cost of ownership (TOC) (Ellram, 1995:4-23). TOC includes every aspect associated with the life-cycle of the product. How much will it cost? How much will it cost to maintain? Is the system/product reliable?

The traditional criteria of price, quality, delivery, and speed are changing to include financial data. Due to proprietary information and traditional thinking, this was extremely uncommon between firms. Figure 2 summarizes the changes in buyer/supplier relations.

Figure 2. Source (Goffin et al., 1997:422-436)

Factor	Traditional Approach	Strategic Approach
Desired relationship w/ supplier	Short run Multiple sourcing Antagonistic	Long run Single-sourcing Cooperative
Objective	Tactical Objective	Strategic Objective
Selection criteria	price Specified quality Delivery speed	Total cost Total quality management Service Financial stability Present and future Technological capabilities Organizational culture and strategy Environmental concerns International supply Supplier record Supplier customer portfolio
Locus of the Purchasing decision	Different departments	Multifunctional teams w/ purchasing, engineering, marketing, and quality
Supplier Evaluation	Unstructured According to minimum Specified values	Structured Evaluation points/weights in total cost models, objective

Principal Component Analysis (PCA) & Data Envelopment Analysis (DEA)

Recent studies in 2000 and 2001 were conducted to identify ways for purchasing managers to identify the factors which are most important when selecting suppliers (Narasimhan et. al., 2001 and Petroni and Braglia, 2000). The results of the Petroni and Braglia PCA study produced a formula which measures three outputs (performance measurements) and three inputs (supplier attributes) using the traditional indicators of product price, shipment quality, and delivery compliance (Petroni and Braglia, 2000:64-65). The results of the PCA for each indicator are computed on a scale from .001 to 1 and summed to rank suppliers.

The Narasimhan et al. DEA study applies non-parametric analysis models to predict those factors which are most important in supplier selection. The deemed six categories most important: 1) quality management practices and systems, 2) documentation and self-audit, 3) process/manufacturing capability, 4) management of the firm, 5) design and development capabilities, 6) cost reduction capability (Narasimhan et. al., 2001:31). The researchers used these categories and sent questionnaires to Company X's purchasing employees to rate the capability of their suppliers.

Channel Equity

A recent study indicated that less than half of the firms in civilian industry have a formal supplier evaluation in place (Simpson et. al., 2002:29). This study suggests that firms must strive to achieve channel equity. Channel equity is the successful attempt to identify suppliers that provide the greatest business synergy through a formalized evaluative process (Simpson et. al., 2002:30). In doing this, it is critical that a firm identify factors other than price, quality, and delivery. It is now more important than ever that business partners establish a win-win relationship with its customers. The surveys of the Simpson et. al. study, which were given to 110 of the top 150 Fortune companies, identified customer relationships and communication as the most critical aspect of supplier evaluations. As such, my thesis will address customer relationships and communication in terms of pre-award and post-award evaluations.

Scope

The commercial scope of this effort includes contractors that are in the "Fortune 500 Top 5" of either the government or air transportation industry. The government

scope if limited to Aeronautical Systems Center (ASC) at Wright-Patterson AFB, OH.

Further, the focus of my research emphasizes assessments which are based on source

selections and award-fee boards which were performed at ASC.

Conclusion

This chapter summarizes the push for reform in the acquisition community and

the implementation of commercial practices. The discussion covers DoD attempts to

devise supplier selection methods and industry examples of how they are reducing the

number of suppliers they use. An overview of supplier criteria and the change in the

buyer/supplier interchange was also provided. Chapter 3 discuses the methodology used

to collect and analyze the available data.

III. Methodology

The purpose of this chapter is to describe the research objectives that the researcher must meet in order to complete this study and the methods employed to meet those objectives. This chapter begins with an explanation of what case study research is, and why I have chosen it to address my research questions. Additionally, this chapter discusses the research design as it applies to the gathering of data. Finally, it addresses the issues of validity and reliability.

Research Objectives

The objective of this research is to assess supplier evaluation methods. This inductive study includes an investigation of pre-award and post-award evaluations conducted by civilian companies and USAF program offices alike. In doing so, I hope to uncover patterns for success that civilian companies have used to expedite the process while maintaining the integrity of the process. If acquisition reform is about getting the products or systems to the warfighter more rapidly, then speeding up pre-award and post-award assessments are steps in the right direction.

Method

This study employs a case study methodology. This type of analysis requires an extensive analysis of three conditions: the type of research question posed, the extent of control the investigator has over actual behavioral events, and the degree of focus on contemporary as opposed to historical events (Yin, 1994:4). The use of past performance and award fees are contemporary as opposed to historical events (Yin, 1994:4). Each case under study is less than 3 years old.

I chose this method for several reasons. First, the case study allows us to compare the data that the USAF currently collects on its suppliers with that of the data that commercial companies use to rate their suppliers. Second, we have no foundational data available on the relationship between supplier rating systems and USAF contracts. Third, USAF acquisition is not much different than that of some commercial companies. DoD acquisition reforms attempt to use innovative practices that are found in commercial companies. The research of this study is defined as exploratory. The goal is to build theory rather than test it. The choice of case study adds two sources of evidence to the research's choices, direct observation and systematic interviewing (Yin, 1994:12). Case studies can include either single- or multiple case studies. This research uses the multiple-case study approach, also known as the comparative case method. It will include quantitative data as well as qualitative. The qualitative data that was obtained included: business strategy (price trends), resources (services), processes (discrepancy rate, financial stability, and certifications), optimization (cycle time performance) and globalization (coverage, compatibility). The quantitative data include: time required to complete evaluation and delivery time.

To complete the study, I will conduct phone interviews and personal interviews and query several points of interest. These include: evaluation factors, automated vs. manual evaluation methods, timelines for supplier evaluation, DoD acquisition restrictions for evaluation, and supplier relationships.

Selecting an Appropriate Case to Study

Before determining which cases were appropriate to study, I first examined the population of interest. In this instance, the population is all commercial companies and

USAF acquisition programs. Our sampling frame begins with Fortune 500 companies that participate in DoD acquisition or currently work in the aerospace industry (e.g. aircraft manufacturing, parts suppliers, air transportation). Some of the companies include Federal Express, United Technologies, Delta Airlines, and Lockheed Martin. These companies conduct pre-award and post-award evaluations on their suppliers. On the USAF side, I chose two source selection programs at Wright-Patterson Air Force Base, OH. They included the C-130 Avionics Modernization Program (C-130 AMP) and the Air Force Research Laboratory Enterprise Business System (AFRL EBS). The individuals from the C-130 AMP and the AFRL EBS program had experience with both pre-award and post-award evaluations. Here I conducted interviews with the program manager or contracting officer who were involved with a source selection or award-fee boards. The assumption is that the C-130 AMP and the AFRL EBS are good representatives of USAF acquisition programs. The C-130 AMP is a large program valued at $2B to $3B and the AFRL EBS is a small program valued at $15M program.

Interview Process

The civilian contractor personnel were interviewed to determine what quantitative and qualitative data is collected in order to establish their supplier ratings. In addition, they were asked to evaluate the effectiveness of their rating systems and how they were constructed. The government personnel were then interviewed to determine how data is collected and whether it would be feasible to utilize a more automated system for USAF acquisitions. The interview process also included a question regarding time required to complete the award fee board. The time required to decide on award fee percentages was very important in determining whether the supplier rating system was useful. After all, if

time was not saved then it becomes redundant to create supplier ratings. Chapter 4 addresses the government time requirements as opposed to the time it takes the contractor to maintain its supplier ratings.

There are three types of interviews: informal conversation, interview guide, and the standardized open-ended interview (Patton, 1990). The informal interview is conducted through normal conversation. This approach is popular because of its flexibility. Our interview combined the informal conversation and the interview guide approach. Through the use of telephone interviews, I asked commercial company employees a series of standardized questions. I used a second set of questions which were similar to the commercial company questions, for the government program personnel. The USAF program office interviews were conducted via face-to-face interviews. This was primarily due to the proximity of my location and the program offices, but also due to the complexity of the source selection and award-fee evaluations. To ensure each contact was informed of the same information, the researcher used an initial telephone contact guide. A set of basic questions was addressed during the interviews and while reviewing the literature and documentation. The questions addressed were open-ended and dynamic in order to facilitate rich discourse. The interview questions were initially mapped to the study's research questions as follows.

Research Question 1: *Can USAF acquisition personnel use supplier ratings in lieu of conducting award-fee boards or past performance evaluations?*

Interview Question (IQ) 10 . How is post-award evaluation maintained by your firm/program office?

IQ 11 Is the process automated or manual? What is the role of purchasing personnel in this process?

IQ 4C. (C=Contractor Only) Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract?

IQ 16. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now?

3G. (G=Government Only) If this process could be automated would it alter your perception of the DoD process?

Investigative Question 2: *What are the similarities between USAF rating categories and commercial rating categories? (These are the factors which are used in award-fee determinations and past performance evaluations)*

IQ 1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)?

IQ 2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)?

IQ 3. How many days on average does it take you to award a $50M contract (e.g. clock starts when a requirement or funding document is received)?

IQ 4. Has your pre-award evaluation process changed over the last 5 years

IQ 7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus?

IQ 8. Is the importance of price or financial performance tailored for each acquisition?

IQ 9. Is price the most important factor in evaluation?

IQ 17. How much training is given in-house regarding supplier evaluations?

IQ 18. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately?

Investigative Question 3: *Can cost-avoidance savings be quantified if either were*

replaced?

IQ 3. How many days on average does it take you to award a $50M contract?

IQ 5. Have you been able to quantify any savings over the last 5 years with your evaluation process?

IQ 12a. How much time (hours, days) is required to complete a post-award evaluation?

IQ 12b. How often is it performed (never, monthly, quarterly)?

IQ 19. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)?

Investigative Question 4: *What acquisition reform initiatives or regulations would aid or hinder USAF application of a revised performance evaluation system?*

IQ 1G. What is your perception of the FAR's restrictions on the pre-award evaluation process?

IQ 1C. What is your impression of the current DoD past performance and risk assessment?

IQ 6C. (Contractor Only) What regulations does your company have which outline the pre-award evaluation process?

Pattern Matching

Yin suggests a "pattern-matching" approach, first described by Donald Campbell in 1975 (Yin, 1994:25). Pattern matching is a process whereby bits of information and findings from each case are "matched" to a theoretical proposition. In this case, I used the matching technique to relate information from each individual case to the questions and objectives described in Chapter 1. Accordingly, by reviewing these relationships and analyzing their importance, I was able to formulate conclusions and recommendations found in Chapter 5.

Case Study Reliability & Validity

The objective of this study was to establish the reliability and validity of supplier rating methods. The questions used to interview the contractor personnel and

government personnel were submitted for a consensus from the research committee prior to execution.

Content validity is not determined using statistical techniques; instead, it is determined through a review of literature and review of previous research in the area being studied (Emory, 1980). An expert in the area of research methods was consulted and agreed that the interview questions appeared effective in determining what factors are included in supplier ratings and what factors are used by government evaluators for award-fee or past performance. The interviews were transcribed entirely and analyzed using open-ended content analysis. The software tool "StatPac" was using to eliminate any bias during content analysis. Essentially, StatPac performed the analysis by summing the frequency of key terms appearing in each question of each interview for all 10 cases (8 commercial companies and 2 government offices). To ensure the accuracy of StatPac's reports, which are included in Chapter 4, a visual count was done to eliminate duplicate words within the same dialogue of one individual interview. Additionally, words were grouped to capture similar terms.

Threats to Validity

Good research design maximizes external validity, reliability, construct validity, and internal validity (Ellram, 1996:104). "External validity reflects how accurately the results represent the phenomenon studied" (Ellram, 1996:104). External validity is threatened when there is not a causal relationship between the constructs of the cause and the effect. In my case, if organizations use automated supplier rating systems and I can not show that that it improves their overall business performance then external validity is threatened. Reliability is threatened when it is not possible to achieve the same results

when repeating the experiment (Ellram, 1996:104). In my case, I used case study protocol in creating the interview questions and these questions were corroborated with committee members (Ellram, 1996:104-105). Construct validity "addresses establishment of the proper operational measures for the concepts being studied" (Ellram, 1996:105). To eliminate this threat, I used multiple sources of evidence, established a chain of events, and had key informants review the case study research (Ellram, 1996:105). In my case, I used phone and personal interviews and I also used information submitted by commercial companies. Three committee members examined the entire document and reviewed the research to ensure that there was a logical flow (Ellram, 1996:106). Construct validity is threatened when assumptions are made regarding measures and how they reflect constructs. Are the constructs reflected by my interview questions? For example, question 19 asks how many personnel participate in pre-award and post-award evaluations. I am assuming that this question is related to how large the program is in terms of total dollars. This may not be related to overall program cost. Internal validity is threatened when an assumption is made that the relationship is a causal one. In my study, I am assuming that the supplier evaluation practices of commercial companies allow them to expedite the buying process. Internal validity would be threatened if automated supplier ratings were not linked to the time required to select a new supplier.

Validity types build on one another. It is the goal of my research to build a bridge from each validity type. The effect is cumulative. Attempts are made to minimize validity threats in sequence.

Generalizing/Summary

Although this research focuses on USAF acquisition it can be applied to DoD acquisition. It also assumes that the "Purchasing and Supply Chain Management" (PSCM) movement is an innovative way of doing business. The PSCM concept is heavily focused on supplier development. Supplier ratings are one means to improve supplier development.

IV. Results

This chapter analyzes the 31 questions that were included in the interviews with commercial company personnel and government program office personnel. Each question includes the StatPac frequency analysis data which identifies the emerging patterns and results from the case study interviews. There are also specific examples listed to provide rationale for findings. Questions 1-21 were asked of both commercial and government organizations. Questions 1C-6C were asked of commercial companies only and 1G-4G were asked of government only.

Note: The percentages are a proportion of a particular response with that of how many organizations were interviewed. In questions 1-21 the "n" is 10. In questions 1C-6C the "n" is 8, and in questions 1G-4G the "n" is 2. It was possible for a company to list more than one response. For Example: In Question 1, there were 7 comments regarding *on-time delivery*, and if 7 is divided by 10 it can be interpreted that 70% of the organizations said that *on-time delivery* is important.

Pre-Award Evaluation

Question 1a "What are the categories/factors of assessment used for evaluating past performance?"

	Number	Percent
on-time delivery	7	70.0 %
overall performance	6	60.0 %
quality	6	60.0 %
price/cost	5	50.0 %
technical/engineering	4	40.0 %
financial health	4	40.0 %
program management	3	30.0 %

n = 10

This question was constructed to provide rationale for what data should be collected assuming a company or organization is interested in establishing a formal supplier rating system. The most common factor mentioned was on-time delivery with seven out of 10 reporting its importance. Quality and past performance were also important. Some companies mentioned price or cost, and although they are not the same, the terms were joined for simplification. In the two government cases, the source selection teams used Contractor Performance Assessment Reports (CPARs) criteria or previous source selection factors to establish their criteria. The CPARs included information on product performance, systems engineering, software engineering, logistics support/sustainment, product assurance, schedule, cost control, management, management responsiveness, subcontract management, and program management. The Air Force Research Laboratory Business Enterprise System evaluated management, technical, functionality, operations and sustainment, and cost performance (AFRL Interview). Raytheon reported that they look at on-time delivery internally, quality in number of lots received vs. rejected, and benchmarks with other competitors (Raytheon Interview). Boeing reported that they look at quality, acceptance rate, on-time delivery, and customer satisfaction (Boeing Interview). United Airlines pointed out that there is a huge difference when dealing with new suppliers. "If I choose a new company I want to know if they're financially viable, if they can deliver on time, how close they are located to our warehouse, and how they perform technically" (United Interview). United Technologies Corporation (UTC) reported 8 categories for assessment. They look at delivery, quality, financial performance, lean manufacturing initiatives, manufacturing capabilities, cost competitiveness, and OpenRatings (UTC interview).

Question 1b "How were these categories constructed (i.e. industry standard, from within)?"

	Number	Percent
from within	7	70.0 %
industry standard	3	30.0 %

n = 10

Companies were asked whether they had constructed their rating systems on their own or based on an industry standard. StatPac excluded the word "within" from the analysis. In counting the responses, I discovered that 5 of the 8 commercial companies had established their factors on their own. The other 3 were established using industry standards. The USAF offices were also grouped in the "within" category.

Question 2 "Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)?"

	Number	Percent
mix	7	70.0 %
qualitative only	2	20.0 %
quantitative only	1	10.0 %

n = 10

The most common quantitative measure included was on-time delivery. In many cases, this data was retrieved automatically. This question produced an interesting difference between commercial companies and government organizations. The commercial companies expressed a desire to make their rating categories as quantitative as possible. However, the commercial companies explained that a mixture of the two was more common. On the contrary, the government organizations explained the importance of qualitative (subjective) ratings. Delta Airlines said they go to great lengths to make all their rating categories as quantitative as possible (Delta Interview). Honeywell reported that they use a mix of quantitative and qualitative measures. "When

dealing with different industries you expect them to adhere to different quality standards (e.g. casting/forging vs. simple parts), as such it's hard to be all quantitative with quality" (Honeywell interview). Raytheon explained that they try to be objective but that there are times when they must be subjective (Raytheon Interview). Raytheon also provided a measure of quantitative measure of quality as number of lots vs. number of items rejected. Boeing stated that their rating system was quantitative in terms of quality, acceptance rate, on-time delivery and qualitative in terms of customer satisfaction. UTC also uses a mix. UTC listed their quantitative measures as delivery, quality, and financial/cost competitiveness and their qualitative measures as lean manufacturing initiatives, engineering initiatives, manufacturing capabilities, and manufacturing capacity (UTC interview). Lockheed Martin assesses quality and delivery quantitatively and affordability and management as qualitative (LM Interview). "We e-mail quality and delivery information to our suppliers on a monthly basis. The qualitative information is sent semi-annually" (LM Interview). The government C-130 Avionics Modernization Program said their source selection was extremely qualitative. "We made every effort to remain subjective, because objective ratings are hard to define in the request for proposals and this was common to most source selections and SAF/AQC guidance" (C-130 AMP Interview).

Question 3 "How many days on average does it take you to award a $50M contract (e.g. clock starts when a requirement or funding document is received)?"

	Number	Percent
1-3 months	6	42.9 %
it depends on complexity	3	21.4 %
1 year	2	14.3 %

n = 10

This question was difficult to evaluate across interviewees. All of those interviewed asked for a dollar value in order to answer the question. The example of a $50M buy was provided. Answers ranged from 3 weeks to one year. Overall, this answer was dependent upon the urgency of the requirement. Honeywell, gave an example of evaluating a supplier in Mexico. In the global environment, "we have to be very confident that the supplier really understands the terms and conditions, so this process may take 6 months" (Honeywell interview). Most explained that this process his highly dependent on the complexity of the buy. United Airlines said that a telecommunications bid for $50M might take 8 months, while a large buy for plastics products could be completed by reverse auctioning in one afternoon (United Airlines interview). The C-130 AMP program was not relative to the $50M example. This buy was $2B to $3B and took more than a year. The AFRL EBS program was $15M and still took almost a year. Commercial companies appear to be able to evaluate and select suppliers more quickly because of a more automated and quantitative assessment. However, there is not enough information to test for this.

Question 4 "Has your pre-award evaluation process changed over the last 5 years?"

	Number	Percent
yes, significantly	5	50.0 %
not, significiantly	4	40.0 %
rating system changed	3	30.0 %
more automated	2	20.0 %

n = 10

Most companies stated their process had become more automated. Delta Airlines stated that they process has changed in the way they collect and distribute information to suppliers (Delta Airlines). Companies such as United, Honeywell, and FedEx are doing reverse auctions with pre-qualified vendors. Raytheon stated that they have changed from a tool and process standpoint . . . we've gotten more electronic and web-enabled" (Raytheon Interview). The government personnel stated that most pre-award evaluations are conducted in the same manner. The source selection process for a Performance Risk Assessment Group (PRAG) is more structured but we are evaluating the same supplier performance categories (AFRL interview). Overall, civilian companies appear to have made a more profound attempt to automate this process.

Question 5 "Have you been able to quantify any savings over the last 5 years with your evaluation process?"

	Number	Percent
yes, savings (e.g. delivery time, quality)	4	40.0 %
dollar savings	2	20.0 %
tried to, but no results	5	50.0 %

n = 10

Many of the answers for this question were not in put terms of dollars; however, they are mentioned because they appear to be important. Honeywell explained that through increased supplier stratification they have been able to shrink the supply base and

decrease defects, thus providing for a 25% improvement in the quality level (Honeywell

Interview). UTC reported to Wall Street a $1B savings through 2001 on the product side

and a $700M savings on the non-product side by the year 2004 (UTC Interview). This

was due largely to their improved sourcing procedures. Delta Airlines listed a 10%

savings due to improved on-time delivery over the last three years (Delta Airlines

Interview). FedEx said they have achieved a 5% to 10% savings using reverse auctions

with E-sourcing (FedEx Interview).

Question 6 "Does your company receive feedback from other business partners
concerning your own past performance evaluation (e.g. how you are perceived or rate
with other firms)?"

	Number	Percent
yes	8	80.0 %
briefings/conference/debrief	3	30.0 %
electronic feedback	3	30.0 %
phone complaints	3	30.0 %

n = 10

Eight of the ten cases said that they receive feedback from suppliers. In the

Government's case the feedback came during the debriefings at the completion of the

source selections (C-130 AMP Interview & AFRL Interview). Often, the government

will de-brief the contractors concerning their past performance ratings so that there are no

surprises in the end. The feedback that potential suppliers receive during government de-

briefs is usually conducted in a formal manner. In the commercial sector this feedback

occurs through both formal and informal feedback mechanisms. "We get feedback

informally, because we don't currently have a formal mechanism for doing that" (Delta

Interview). "Our suppliers are trained on how we are going to measure them and it is

often more complicated than you think it would be" (Delta Interview). Honeywell stated

that they receive most of the feedback during FAA audits. "One of the biggest complaints is that the original equipment manufacturers (OEMs) are not managing their suppliers very well, and Boeing took us to task" (Honeywell Interview). "When Boeing comes to Honeywell and asks us how our suppliers are performing we are now a little more responsive" (Honeywell Interview). Raytheon gets their feedback by talking to suppliers. "We try to benchmark suppliers against their competition without them knowing who their competition is" (Raytheon interview). At UTC, the suppliers call purchasing personnel for feedback or they e-mail them. "If they get good ratings we don't hear from them, but if they get bad ratings they'll contact us" (UTC Interview). In United Airlines' case, their purchasing personnel are reluctant to get into lengthy discussion because they don't want to prolong the buying process by having to go into lengthy detail as to why a supplier didn't win (United Airlines Interview). FedEx doesn't receive much feedback from suppliers due to the time spent up-front in explaining to suppliers how the scorecard system works (FedEx Interview). Lockheed Martin has an annual conference with their strategic suppliers where concerns are addressed (Lockheed Martin Interview).

Question 7 "Would you categorize most of your contracts as fixed-price, incentive based, or cost-plus?"

	Number	Percent
fixed-price	8	80.0 %
cost/mix	2	20.0 %

n = 10

This question indicated that most commercial firms use fixed-price contracts. The government offices reported cost-type arrangements as the most common. The contract type depends greatly on what type of buying an organization is engaged in. In the government system's acquisition environment the supplier is subjected to more risk. This is due to the amount of research and development associated with first time buys. As a result the government employs cost-type arrangement to share the risk with the supplier. It is hard to compare these commercial sector and the government programs with this question. An interesting note is that Honeywell, UTC, and FedEx reported that they were using many fixed-priced regressive contracts. This means that the cost is reduced each year because of improvements that suppliers are expected to make (UTC Interview).

Question 8 "Is the importance of price tailored for each acquisition?"

	Number	Percent
yes	7	70.0 %
mix with performance/quality	4	40.0 %
complexity/depends	2	20.0 %

n = 10

The most common response was yes, though in reality firms use numerous approaches. In most cases there was an increased emphasis on non-price related factors. "In the case of buying a heads-up display or electronics you're buying a design, and price is going to become less important" (Delta Airlines Interview). Raytheon often uses a

30/30/30/10 scale. They put 30% emphasis on quality, 30% emphasis on on-time delivery, 30% on price, and a 10% management factor (Raytheon Interview). Boeing states that price is most important during OEM buys, but if they are developing a new system then they examine life-cycle cost which includes the cost of ownership, maintenance costs, and quality concerns (Boeing Interview). Much of the weighting for price during an evaluation depends on the specifications for an item. It is often not the most important, but if the requirements are well defined, it should be (AFRL Interview). Lockheed Martin stated that they have moved entirely to a best value approach, even when using reverse auctions (Lockheed Martin Interview).

Question 9 "Is price the most important factor in evaluation?"

	Number	Percent
no/best value	7	70.0 %
depends	3	30.0 %
yes	2	20.0 %

n = 10

Half of those interviewed answered this question no. However, those that said it was a best value approach were grouped to with the "no" answers. All 10 said that it was a factor in every buy, but not necessarily the most important. Honeywell was grouped in the yes category but only because of their particular scenario. Often times, price is all that remains to discriminate based on the high standards of the aerospace industry (Honeywell Interview). Raytheon explained that historically price has been pegged as most important; however, it has changed. "We really try an emphasize best value, if I pay 10 cents less and I end up having to ship it back it becomes more expensive" (Raytheon Interview). A UTC representative did point out that their personal opinion

was that price wasn't most important, but that the corporate line would probably be "yes" (UTC Interview).

Post Award Evaluation

Question 10 "How is post-award evaluation maintained by your firm?"

	Number	Percent
rate/ratings/scorecard	5	50.0 %
overall program management	4	40.0 %
track performance	4	40.0 %
time & delivery	3	30.0 %

n = 10

Many of the companies interviewed have instituted scorecard rating systems to evaluate their suppliers after contract award. Many of the companies are still in the early stages of developing scorecards. "We have a scorecard that we give to our top 50 or so suppliers in technical operations and we have quarterly meetings to discuss the numbers with them (Delta Interview). Much of this question seemed to be dependent on whether this was the first time a company was dealing with a supplier. Honeywell said that for new products they look at management capability, project plans, schedule targets, process capability, and first-article production (Honeywell Interview). For something like microprocessors from Intel we're not going to have much leverage, as they'll tell us when they're coming to market (Honeywell Interview). Raytheon has a newly established rating system which establishes thresholds of performance (Raytheon Interview). If a supplier slips below the threshold they are put on probationary status. Raytheon has a newly established evaluation tool called the SRS (Supplier Rating System). Boeing also has a thorough scorecard system where they rate suppliers on a specific procurement and

roll that into an across the board rating (Boeing Interview). United Airlines expressed

some concern that they are not doing as much as they could to track on-going supplier

performance (United Interview). The United representative reported that under different

financial times they would like to invest in a supplier rating tool but that currently it is

not possible. UTC has a monthly scorecard system for quality and delivery information

that is published on its website (UTC Interview). All six divisions at UTC roll-up their

receipts for suppliers and they consolidate ratings at the corporate level. FedEx uses

supply chain specialists and sourcing managers who produce ratings on a monthly basis

via a scorecard (FedEx Interview). Additionally, there are supply management

specialists who maintain a portfolio on each company (FedEx Interview). Lockheed

Martin also compiles ratings on each supplier which can be used for future award

determinations (Lockheed Martin Interview). They have a STAR supplier program

which recognizes excellent performance and a Supplier Performance Evaluation &

Action Response (SPEAR) program to help suppliers recover from past shortfalls in their

ratings. The Government program offices use the Contract Performance Assessment

Reports (CPARS) rating system if certain threshold levels are exceeded (C-130 AMP

Interview). CPARs are not required for smaller purchases. The Government does have

award-fee determinations which are kept on file; however, they are not normally

referenced for future award determinations (C-130 AMP Interview). The AFRL does not

use CPARs all too often. The process at AFRL is very informal and can make it hard to

compare suppliers down the road (AFRL Interview).

Question 11a "Is the process automated or manual?"

	Number	Percent
manual process	4	40.0 %
delivery/quality (automated process)	3	30.0 %
web (automated process)	2	20.0 %

n = 10

The responses for this question were somewhat mixed. Many of the companies used manual retrieval processes while others had databases which could be queried automatically to obtain quality and delivery information. Delta Airlines has a semi-automated system which extracts data.

Question 11b "What is the role of purchasing personnel in this process?"

	Number	Percent
database/spreadsheet (purchasing role)	3	30.0 %
no effort (automatic)	2	20.0 %

n = 10

There are four spreadsheets for on-time delivery, lead-time, pricing, and quality (Delta Interview). The buyer then consolidates the spreadsheets into one. Honeywell uses electronic media to communicate with suppliers regarding their quality, parts rejected over parts received, and on-time delivery, but most of the collection and dissemination is manual (Honeywell Interview). They hope to have a web-based scorecard by next year. Raytheon's process is somewhat automated (Raytheon Interview). There is an incoming inspection loop and database that scores the supplier's performance. The buyer can query the supplier by code and the system will automatically download performance data for the last 6 months, 1 year, or 2 years (Raytheon Interview). At Boeing the process is semi-automated. The database requires

manual input, but the output can be pulled automatically (Boeing Interview). The

buyer's role is fairly limited (Boeing Interview). United's post-award process is manual.

If they don't hear complaints from internal users, then they're assumed to be satisfied

(United Interview). At UTC it is a combination of both. "It's automated out of the

business units but it's a manual effort to consolidate it because of the legacy computer

systems we still use" (UTC Interview). FedEx also uses a mix. The number of purchase

orders that are delivered on-time is automatic, but other information can take 30 minutes

to an hour for buyers to retrieve (FedEx Interview). At Lockheed Martin a good portion

of post-award evaluation is automated. The monthly quality and delivery feedback is

automated via e-mail, and the semi-annual data requires the buyers to fill out a web form

(Lockheed Martin). Under the Government programs the CPARs and award-fee

determinations are the responsibility of the program managers (C-130 AMP Interview).

The purchasing personnel provide support with administrative contract information only

(AFRL Interview).

Question 12a "How much time (hours, days) is required to complete a post-award

evaluation?"

	Number	Percent
30 minutes to 1 hour	4	40.0 %
5 minutes (how much time)	2	20.0 %
1 month	1	10.0 %

n = 10

Responses to this question were dependent on the automation level of a

company's evaluation system. Delta Airline's process takes about a half hour for each of

their 50 strategic suppliers, and purchasing personnel can update information at the first

of the month or at least quarterly (Delta Interview). At Boeing the process takes about 30

minutes each month to compile the data into a 12 month moving average (Boeing

Interview). At FedEx the process takes only a couple of minutes to retrieve the data

(FedEx Interview). The monthly reports at Lockheed Martin take about 30 minutes to

complete while the semi-annual reports are more time consuming (Lockheed Martin

Interview). The C-17 estimate for award-fee reviews was in excess of 100 man-hours (C-

130 AMP). However, the interviewee's C-17 experience was a multi-billion dollar effort.

Question 12b "How often is it performed (never, monthly, quarterly)?"

	Number	Percent
monthly	4	40.0 %
quarterly	3	30.0 %
not performed	1	10.0 %

n = 10

The most common response was monthly or quarterly. Much of it depended on

the strategic importance of a particular supplier. The AFRL office does not usually

compile this information for science and technology contracts. In other government

programs it is compiled during an award-fee or CPARs write-up on a quarterly basis.

Question 13 "Does your evaluation after award affect award-fees or bonuses given for
above average performance?"

	Number	Percent
not given	4	40.0 %
incentive/yes	4	40.0 %
penalty	2	20.0 %

n = 10

Four of the eight commercial companies answered no to this question. Honeywell stated that its suppliers don't get incentives other than the opportunity to get more business with them (Honeywell Interview). The companies that said "yes" went on to say that very few of their contract arrangements were tied to rating's incentives. Delta said that they sometimes set up penalties associated with performance ratings, but this was the exception rather than the rule (Delta Interview). The government program offices do use incentive type contracts. "There are very few incentives in our contracts as that sort of thing goes in cycles" (AFRL interview).

Question 14 "What factors do you perceive will affect the success or failure of a contract?"

	Number	Percent
supplier management/up-front	4	40.0 %
specifications/communication of needs	3	30.0 %
capability	2	20.0 %
subcontractor failure	2	20.0 %

n = 10

This question indicated that supplier management was extremely important. In addition the proper specifications were also a pattern. Up-front involvement with the supply chain is extremely important (Raytheon Interview). "Process capability is critical but we are also extremely concerned with how a supplier manages their sub-tiers because this is the most common reason for supplier delays (Boeing Interview). Lockheed Martin pushes its suppliers to manage and rate their suppliers (Lockheed Martin Interview). Subcontracting management is also challenging for the DoD, because the Federal Acquisition Regulation (FAR) gives the government privity with its prime contractor but not its subcontractor. The FAR specifically precludes DoD from directing the actions of

subcontractors. There is a CPARs rating for subcontracting management which can be used for future source selections to help gage how a supplier manages its subcontractors.

General Questions

Question 15 "How would you describe/define strategic sourcing?

	Number	Percent
supply chain	6	60.0 %
long-term relationships	4	40.0 %
team effort	4	40.0 %
partnering	3	30.0 %
leveraging spend	2	20.0 %

n = 10

The most compelling finding from this question was the unfamiliarity of this term to the government personnel. This term is often preached at higher headquarters but has not yet reached the program offices interviewed (AFRL Interview). On the contrary, the commercial companies have even gone so far as to create a strategic sourcing section within the company. "Strategic sourcing is the selection of long-term suppliers for sourcing on a total cost basis. It is aided by a seven-step process on the web that each buyer must walk through in order to source an item" (Delta Interview). Honeywell defines strategic sourcing as leveraging their spend to get the best prices from their suppliers (Honeywell Interview). Raytheon points out that the whole element of strategy in sourcing is to find differentiators among competitors. Raytheon's other key points are: 1) The folks that they buy the most from are brought in early for partnering, and 2) they ensure that they've got the right skill sets in-house because our people need to understand who we should link with (Raytheon Interview). United has a strategic sourcing

department and their representative feels that it shows how purchasing has changed. "It is essentially, looking at more than price and establishing long-term relationships that create long-term value for the company" (United Interview). UTC uses commodity management teams to drive the supply base towards commonality among the divisions within their company (UTC interview). Lockheed Martin defines strategic sourcing as a attempt to stratify the supply base at the top level of management (Lockheed Martin Interview). All eight commercial companies said strategic sourcing applies before and after award.

Question 16 "What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now?"

	Number	Percent
up-front work	3	30.0 %
objective criteria/standard process	2	20.0 %
firm specifications	2	20.0 %
improved ethics	2	20.0 %

n = 10

This question resulted in a variety of answers. The four "lessons learned" were: 1) up-front work, 2) objective criteria or a standard process, 3) firm specifications, and 4) ethics. Delta said that they are making a conscious effort to make decision on an objective base. "We talk about what we're trying to achieve but often we don't nail down the terms, and as a result, we often select a supplier based on what feels right" (Delta Interview). In an attempt to save money, Honeywell explained that they are often guilty of misleading a supplier by letting prospective suppliers conduct self-assessments by video (Honeywell Interview). "When a new supplier gets excited about doing business with us, they can do wonders with a digital video camera . . . the images of the

manufacturing line look promising, but if we had actually visited the plant we would have realized they didn't have the capability" (Honeywell Interview). This can become an ethical challenge for a "hungry" supplier. Raytheon also expressed an ethics concern about the financial viability of many companies (Raytheon Interview). "Ethics is becoming significant in pre-award and post-award evaluations" (Raytheon Interview). Given the Enron and WorldCom debacles, there is reason to believe this trend will continue. Boeing expressed concern that their organization has yet to institutionalize the scorecard system (Boeing Interview). Their push is to get "buy-in" from their employees and staff to utilize their supplier evaluation procedures. United Airlines said that firm or loose specifications are often the most common reasons a contract succeeds or fails (United Interview). The Government personnel both agreed that an earlier start would enhance a source selection. "Getting involved with the Defense Contract Management Agency (DCMA) to find out how a particular division of a major corporation is performing would take some of the guess work out of the process" (C-130 AMP Interview). Another interesting comment from the C-130 AMP Interview involved the lack of experience at the senior management level regarding past performance evaluations. "Program offices are hesitant to assign key managers to participate on a source selection because of other responsibilities, and as a result, the senior leaders do not know the process nor can they provide decision making assistance to the source selection evaluation team (SSET) members" (C-130 AMP Interview).

Question 17a "How much training is given in-house regarding supplier evaluations?"

	Number	Percent
2-4 hours	7	80.0 %
8 hours	3	30.0 %

n = 10

There was great variability in this answer. A few of the firms had some type of training to discuss supplier evaluations; however, they consolidated it with the annual training for purchasing and sourcing personnel. "A year or two back we wanted all the buyers to become certified purchasing managers, and so they went to six or seven days of training that covered a bit of the scorecard process" (Delta Interview). Honeywell requires 40 hours of training on their business processes and software training for OneSource, which is used by purchasing personnel to ensure they take the right steps in selecting a supplier (Honeywell Interview). Raytheon used subject matter experts to deploy their scorecard system. They used quality, engineering, and supply chain personnel to conduct 16 hours of training (Raytheon Interview). Boeing provides three hours of training for pre-award and source selections and another four hours to cover their preferred supplier program (Boeing Interview). UTC provides a 16 hour class which discusses their eight-step sourcing process (UTC Interview). The government personnel receive two hours of training on EZ-Source, which is a database tool for compiling past performance, cost performance, and technical information for source selections (C-130 AMP & AFRL Interview).

Question 17b "What type of training is given in-house regarding supplier evaluations?"

	Number	Percent
new employee	4	40.0 %
yearly update	3	30.0 %
software training	2	20.0 %

n = 10

There was not much variation in the types of training offered. The government

and commercial companies appear to employ the same types of teaching methods.

Question 18 "Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately?"

	Number	Percent
yes, ipt/multi-functional/commodity	10	100.0 %
no	0	0.0 %

n = 10

The government and the commercial firms all used the integrated product team

(IPT) approach when conducting evaluations. Some firms did not call it an IPT, but in

principle it was a multi-disciplined (i.e. quality, engineering, supply, finance,

procurement) approach. Firms are not likely to be located in the same office, but they do

have a supply chain leader and a business leader who draws in resources as needed (Delta

Interview). The respondents said that much of the use of IPTs would be determined by

the complexity of the buy, or the frequency of the buy. If it was a repetitive buy, then an

IPT might not be required. "The best situation is one where you sit people together: The

decision making is real time" (Raytheon Interview). The government personnel felt that

the IPT approach works really well. "Years ago there were concerns that if an individual

was matrixed out to a specific program that they might lose support from the home office, but I don't think that's been the case" (C-130 AMP Interview).

Question 19 "How many individuals typically participate in a pre-award or post-award evaluation (e.g. $50M acquisition)?"

	Number	Percent
core 4-10 people	4	40.0 %
10-20	3	30.0 %
unknown	3	30.0 %

n = 10

$50M was used to simplify this question. The StatPac program did not generate numbers in its analysis and as such some examples are provided. "20 or 30 people wouldn't surprise me, but I would definitely say that we use a core of 6 to 10 people" (Delta Interview). "We would use a core of four people: a commodity lead, a quality representative, and an engineering representative; however, it would definitely touch a lot more" (Honeywell). "I would say a core of 4 to 10 people would be used" (UTC Interview). The government teams were both estimated at around 15 to 20 people (C-130 AMP and AFRL Interview). These answers did not produce any significant inconsistency between the government and commercial companies.

Question 20 "Would you characterize your relationships with suppliers as short-term or long-term?

	Number	Percent
long-term	9	90.0 %
mix	1	10.0 %
short	0	0.0 %

n = 10

The majority of those questioned said that their relationships were becoming more and more long-term. The mixed response came from AFRL. "If we are doing research in the propulsion division it's long term, but if its Small Business Innovative Research (SBIR) contractors it's usually short-term" (AFRL Interview). This is because of the turnover in the SBIR program.

Question 21 "Has your relationship with your suppliers improved or suffered because of your evaluation procedures?"

	Number	Percent
improved/expect/relationship	8	80.0 %
unchanged/suffered	2	20.0 %

n = 10

8 of the 10 cases said that their relationships had improved with their suppliers. Delta and Honeywell both felt that their relationships were unchanged or had suffered. "Delta has brought some supplies back in-house and now we are competitors with some of our suppliers" (Delta Interview). Honeywell says that they are still demanding towards suppliers and that some may even be agitated by the fact that Honeywell expects them to now share more of the costs (e.g. inventory) (Honeywell Interview). UTC expects that their implementation of OpenRatings will be pivotal in determining whether suppliers approve of their evaluation procedures. "The suppliers like our scorecards because it provides them feedback on a more consistent basis" (Lockheed Martin Interview). "If a supplier doesn't receive our e-mail scorecard reports then we definitely hear from them" (FedEx Interview). The government personnel have seen improvement as far as how suppliers perceive the source selection process. "Our past performance evaluations are now more open" (AFRL Interview). This is due in large part to the de-

briefings that are given to the successful and unsuccessful offerors for a given source

selection (C-130 AMP).

"Commercial Company" Only Questions

Question 1C "What is your impression of the current DoD past performance and risk
assessment?"

	Number	Percent
thorough process	4	50.0 %
fair	3	37.5 %
time consuming	2	25.0 %

n = 8

The responses were not mutually exclusive. Some companies had an opinion and

others did not. I was surprised to discover that many of the commercial companies

thought that the DoD source selection process was effective. Most admitted that they

could not spend that amount of time or money for such an endeavor, but said that it was

necessary to satisfy the taxpayers. "My impression is it takes a lot of time upfront, but

that it's a very thorough and necessary effort" (Delta Interview). "I think it's fairly

consistent with what we do, and we have even tried to mirror our process to match the

DoD's in some ways" (Raytheon Interview). One individual commented that some

commercial companies do not want to do business with the DoD because of the

administrative burden it places on a potential supplier (United Airlines Interview).

Question 2C "What is your impression of third-party rating systems (e.g. OpenRatings)?"

	Number	Percent
only heard of it/no impression	5	62.5 %
just another evaluation tool	3	40.0 %
wouldn't put 100% confidence in it	2	25.0 %
useful for financial measures	2	25.0 %

n = 8

More than half of those interviewed had heard of the OpenRatings system. UTC was the only company that had purchased the OpenRatings scorecard option but others such as Honeywell were using the OpenRatings as a tool in their evaluations. "We use them as an alert mechanism because some of commodity managers don't have the time to look at financials" (Honeywell Interview). "It lets the buyers set up a watch list for those buyers that are managing many suppliers and our impression of it has very positive" (Honeywell Interview). "We don't put 100% faith in OpenRatings but we use it to drive some internal activities" (UTC Interview). Other companies are a little more hesitant to use such a system. "The system at Lockheed Martin is already so automated that OpenRatings would not provide much benefit. I see its biggest payoff to the smaller companies that don't have the computer programming resources" (Lockheed Martin Interview). "I hear it's pretty good. It looks attractive but as upgrades become necessary it could become expensive. There's also so much to control, and even though OpenRatings would be a partner they're still in it to make money" (Raytheon Interview).

Question 3C "If your process is automated, who designed the software?"

	Number	Percent
in-house design	4	50.0 %
help from a third party	2	25.0 %
COTS software	2	25.0 %

n = 8

Half of the companies created the system in-house. None of the companies interviewed had turned over responsibility for ratings to a third-party company. UTC and Honeywell use OpenRatings, but only in addition to their in-house system (Honeywell and UTC Interviews). Raytheon designed their automated rating system in-house with the help of Price-Waterhouse-Cooper (Raytheon Interview). Others such as FedEx and Lockheed use COTS software or a homemade windows-based program.

Question 4C "Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract?"

	Number	Percent
all contracts (aggregate roll-up)	6	75.0 %
particular contract	5	62.5 %
by division	2	25.0 %

n = 8

This question is extremely important in determining the capability and level of effort required by a supplier rating system. Many companies are still trying to determine if it is necessary to give ratings for each contract or if an across the board approach is sufficient. Honeywell, Delta, and Boeing use across the board roll-ups for divisions. Boeing is currently investigating ways to break their rating down into individual contracts (Boeing Interview). Raytheon, FedEx, UTC, and Lockheed Martin can retrieve information on particular contracts but often roll-up their information to division level.

Question 5C "Does your company do business in the aircraft or manufacturing industries?"

	Number	Percent
yes	8	100.0 %
no	0	0.0 %

n = 8

This question was originally designed to capture companies that might not have been aircraft or manufacturing industries. In all 8 cases the firms were government aircraft contractors, airline companies, or air shipment specialists.

Question 6C "What regulations does your company have which outline the pre-award evaluation process?"

	Number	Percent
procedures/guidelines/guide	5	62.5 %
web-based	3	37.5 %
policies/standard	2	25.0 %

n = 8

Procedures and policies are not lengthy documents in comparison with the Federal Acquisition Regulation. "Because it's web-based there isn't a ton of procedures around it as it's an internal document that is published or sent via e-mail that is approximately 10 pages long" (Raytheon Interview). Boeing has PROs (Enterprise Procedures) that address supplier performance measurement, supplier certification, and strategic sourcing (Boeing Interview). In most cases Boeing will keep PROs under 30 pages. United Airlines' entire purchasing regulation is web-based and only 15 pages long.

Government Only

Question 1G "What is your perception of the FAR's restrictions on the pre-award evaluation process?"

	Number	Percent
not restricted by FAR	2	100.0 %

n = 2

The government personnel that were interviewed did not find the FAR restrictive when applied to source selection evaluations. "Most of the guidance that we used in carrying out our PRAG was driven down from AFMC Headquarters or SAF/AQC" (C-130 AMP Interview). "Most of the procedures aren't in the FAR but come down from headquarters" (AFRL Interview).

Question 2G "How many protests have you received on source selections?"

	Number	Percent
none	2	100.0 %

n = 2

Neither of the two source selection cases received a protest. There was a strong belief that the C-130 AMP program did not receive a protest because of the upcoming Joint Strike Fighter award (C-130 AMP Interview).

Question 3G "If this process could be automated would it alter your perception of the DoD evaluation process?"

	Number	Percent
yes/communication/subjective	2	100.0 %

n = 10

The Government personnel felt that the scoring could be automated; however, it might kill the fundamental benefit of communication between the teams (C-130 AMP). The government individual interviewed reflected on the comments from General Kadish, a former program director for the C-17, who said that if ratings are quantified then numbers are all that will improve (C-130 AMP Interview). The thought process is that communication between the government and its contractor/supplier is the most critical aspect of a program's success or failure (C-130 AMP Interview). The AFRL representative stated that there is a lot of information that can not be quantified in an automated rating and went on to say that subjective ratings can be a good thing (AFRL Interview).

Question 4G "Does the program office currently maintain a performance file for each of its contractors?"

	Number	Percent
no	2	100.0 %

n = 2

The government can retrieve performance information on a particular supplier if it is currently under contract in an award-fee arrangement (C-130 AMP Interview). "We also have CPARs for some larger contracts" (C-130 AMP Interview). "Currently, we are only capturing performance data for individual contracts. What I'd really like to see is a roll-up so that I could assess Boeing's St. Louis division. Currently there is no means for the program offices to roll-up their data" (C-130 AMP Interview).

V. Discussion and Recommendations

The purpose of this research was to examine the feasibility of USAF acquisition personnel using automated supplier evaluation systems in lieu of past performance evaluations and award-fee boards. The source selection process and award-fee determinations require valuable time for the acquisition professional. It is not uncommon for the source selection team to spend six months evaluating past performance only to find that all suppliers are equal in terms of past performance. If the goal is to find discriminators between prospective contractors, then there may be a cheaper way. The focus of this effort was to examine potential categories (quantitative and qualitative data) that could be assessed for contract award or for evaluation after award.

At the outset, the intent was to determine if the Purchasing and Supply Chain Management (PSCM) program could utilize supplier performance ratings in hopes of identifying capable suppliers at a much faster pace. Industry seems to have a positive attitude toward DoD's current evaluation system. Most companies thought that although the process was time consuming, it was effective. Most companies interviewed appeared to agree with the DoD evaluation system because of public law and taxpayer scrutiny. In many ways they try to follow what DoD does in these areas. However, because these firms are motivated by profit, they must find ways to expedite and cut costs during evaluations. The question is, how far is the USAF acquisition community or Congress willing to go in order to cut costs? Is the FAR going to incorporate an automated rating system or can the USAF institute such a system on its own?

This chapter addresses this research effort's conclusions, benefits, limitations, and suggestions for future research. All of the conclusions will be presented as the interview questions were mapped to the research questions from chapter 3.

RECOMMENDATIONS/CONCLUSIONS

Primary Research Question 1 asked "can USAF acquisition personnel use supplier ratings in lieu of conducting award-fee boards or past performance evaluations?" This question was answered through a series of investigative questions.

Interview Question (IQ) 10 asked "How is post-award evaluation maintained by your firm/program office?" Many of the companies interviewed reported having instituted scorecard rating systems to evaluate their suppliers after contract award and others are in the early stages of developing scorecards. In contrast, the government uses previous source selections and headquarters command or SAF/AQC guides to model their evaluations.

IQ 11 asked "is the process automated or manual?" What is the role of purchasing personnel in this process? The responses for this question were somewhat mixed. Many companies used manual retrieval processes while others had databases which could be queried automatically to obtain quality and delivery information. The role of the purchasing personnel is limited to data retrieval.

IQ 4C (C=Contractor Only) asked "do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract?" Many companies are still trying to determine if it is necessary to give ratings for each contract or if an across the board approach is sufficient. Honeywell, Delta, and Boeing use across the board roll-ups for divisions. Raytheon,

FedEx, UTC, and Lockheed Martin can retrieve information on particular contracts but often roll-up their information to division level.

IQ 16 asked "what 3 things could you have done better in pre-award and post-award evaluations knowing what you know now?" This question resulted in a variety of answers. The four most prevalent were: 1) up-front work, 2) objective criteria or a standard process, 3) firm specifications, and 4) eliminating ethical concerns.

I would recommend that the USAF acquisition community devise an automated scorecard system to track suppliers on contracts above $25K. If such a system were intended for small purchases it could become extremely time consuming on small repetitive buys. Although my research was limited to two program offices at the product center level, an automated system could also provide information for depot and operational buying units. Most commercial companies are moving in the automated scorecard direction and those that have implemented scorecard ratings perceive them to be extremely effective. Potential suppliers as well as current suppliers are welcoming the feedback they receive from these companies as a way to see how well they're doing.

The implications for the USAF are that it would have to be incorporated with a standard procurement system. The system would need visibility of all individual contract ratings for a particular supplier and an aggregate rating for pre-award assessments. If there are post-award implications, then only the ratings for a specific contract would be queried. The caveat with any government system would be to maintain subjective ratings. Quantitative ratings are effective but often result in a different outcome than desired. This is why General Kadish (C-17 SPO Director) was hesitant to make all ratings quantitative. His thought process was that only the quantifiable numbers on paper

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would improve. When ratings become entirely quantitative the qualitative factors such as program management and team communication will not improve (C-130 AMP). Research supports General Kadish's fear: "Whether dealing with monkeys, rats, or human beings, it is hardly controversial to state that most organisms seek information concerning what activities are rewarded, and then seek to do (or at least pretend to do) those things, often to the virtual exclusion of activities not rewarded" (Kerr, 1975:769).

Subsidiary Question 2: What are the similarities between USAF rating categories and commercial rating categories?

IQ 1 asked "what are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? The most common factor was on-time delivery. Quality and past performance were also important. In this case some companies mentioned price or cost, and although they are not truly the same, the terms were joined for simplification. How the categories were constructed was not significant.

IQ 2 asked "is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? This question produced an interesting difference between commercial companies and government organizations. The commercial companies expressed a desire to make their rating categories as quantitative as possible. However, the commercial companies explained that a mixture of the two was more common. On the contrary, the government organizations explained the importance of qualitative (subjective) ratings.

IQ 3 asked "how many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)?" All of those

interviewed asked for a dollar value in order to answer the question. I told them to tell me how long it would take them to complete a $50M buy from cradle-to-grave. I got answers ranging from 3 weeks to one year. Overall, the commercial companies were much faster.

IQ 4 asked "has your pre-award evaluation process changed over the last 5 years?" Most companies stated the process had become more automated. Delta Airlines stated that they process has changed in the way they collect and distribute information to a supplier (Delta Airlines). I noticed that companies such as United, Honeywell, and FedEx are doing reverse auctions with pre-qualified vendors. Raytheon stated that they have changed from a tool and process standpoint…we've gotten more electronic and web-enabled" (Raytheon). The government personnel stated that changes over the last five years have been minimal (AFRL).

IQ 7 asked "would you categorize most of your contracts fixed-price, incentive based, or cost-plus?" This question indicated that most commercial firms use fixed-price contracts. The government offices reported cost-type arrangements as the most common. Most of it depends on what type of buying an organization is engaged in.

IQ 8 asked "is the importance of price tailored for each acquisition?" The most common response was yes, but it depends. In most cases there was an increased emphasis on non-price related factors.

IQ 9 asked "is price the most important factor in evaluation?" Half of those interviewed answered this question no. However, those that said it was a best value approach were grouped with the "no" answers. All 10 said that it was a factor in every buy, but not necessarily the most important.

IQ 17 asked "how much training is given in-house regarding supplier evaluations?" A few of the firms had some type of training to discuss supplier evaluations; however, they consolidated it with the annual training for purchasing and sourcing personnel.

IQ 18 asked "does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately?" The government and the commercial firms all used the integrated product team (IPT) approach when conducting evaluations. Some firms did not call it an IPT, but in principle it was a multi-disciplined (i.e. quality, engineering, supply, finance, procurement) approach.

The USAF rating categories are in line with that of commercial companies. There is little evidence to indicate that there is a distinct difference between the commercial company and USAF evaluation categories. The only difference is that the USAF system accounts for additional qualitative ratings. If evaluations became entirely quantitative then each source selection might not be a true "best-value" (AFRL).

On-time delivery and quality were the most common factors examined during an evaluation. Where the government falls short is in its ability to automatically track the delivery or receipt of an item. At some of the commercial companies the receiving dock automatically inputs delivery information into a database to be pulled when assessing a supplier's actual delivery performance. The same can be said about quality at inspection. The receiving/inspection personnel will input quality defects or acceptance rates. In the government environment purchasing personnel unaware of delivery until they receive an invoice or the user calls to complain about the quality of a commodity or service.

In terms of award-fee boards it was extremely hard to compare the categories between commercial companies and the USAF program offices. Commercial companies predominately use fixed-priced arrangements. Very few of them have incentives to exceed the minimum requirement of a contract other than more business. The one recommendation for improvement in the post-award government categories would be to become more quantitative in the three areas of *cost performance*, *time of delivery*, and *schedule* (AFMC Award-Fee Guide, 2000:83).

Subsidiary Question 3: Can cost-avoidance savings be quantified if either were replaced?

IQ 3 asked "how much time (hours, days) is required to complete a pre-award evaluation?" For a $50M project I got answers ranging from 3 weeks to one year. Overall, this answer was dependent upon the urgency of the requirement.
IQ 5 asked "have you been able to quantify any savings over the last 5 years with your evaluation process?" Many of the answers for this question were not in put terms of dollars. Only UTC reported a $1B savings through 2001 on the product side to Wall Street and a $700 level savings by the year 2004 (UTC).

IQ 12a asked "how much time (hours, days) is required to complete a post-award evaluation?" This question was extremely dependent on how automated a company's evaluation system was. Delta Airline's process took about a half hour for each of their 50 strategic suppliers (Delta).

IQ 12b asked "how often are post award evaluation performed (never, monthly, quarterly)?" Some of the companies can update this information at the first of the month but the typical requirement was to update rating information quarterly. At Boeing the

process takes about 30 minutes each month to compile the data into a 12 month moving average (Boeing).

IQ 19 asked "how many individuals typically participate in a pre-award or post-award evaluation for $50M?" "20 or 30 people wouldn't surprise me, but I would definitely say that we use a core of 6 to 10 people" (Delta). "We would use a core of four people: a commodity lead, a quality representative, and an engineering representative; however, it would definitely touch a lot more" (Honeywell). The government teams were both estimated at around 15 to 20 people (C-130 AMP and AFRL). These answers did not produce any significant inconsistency between the government and commercial companies.

Government cost-avoidance might be quantified if both source selections and award-fee evaluations were less time consuming. When source selection questionnaires concerning supplier past performance are sent to government contracting officers and program managers they are returned with quality, on-time delivery, and management information. This effort is time consuming for a PRAG or source selection team. This was evidenced by the $15M AFRL EBS acquisition which took 1 year to complete (AFRL). If quantitative and qualitative information could be pulled from a supplier scorecard database then questionnaires would become unnecessary. Additionally, in the case of the C-17 award-fee board over 100 man hours was spent each quarter in assessing McDonnell Douglas's (now Boeing) performance (C-130 AMP). Some of this time would be saved if ratings were automated.

Subsidiary Question 4: What acquisition reform initiatives or regulations would aid or hind USAF application of a revised performance evaluation system?

IQ 1G (G=Government Only) asked "what is your perception of the FAR's restrictions on the pre-award evaluation process?" The government personnel that were interviewed did not find the FAR restrictive when applied to source selection evaluations. "Most of the guidance that we used in carrying out our PRAG was driven down from Air Force Materiel Command Headquarters or SAF/AQC" (C-130 AMP). "Most of the procedures aren't in the FAR but come down from headquarters" (AFRL Interview).

IQ 6C. (C=Contractor Only) asked "what regulations does your company have which outline the pre-award evaluation process?" Procedures and policies are not lengthy documents in comparison with the Federal Acquisition Regulation. "Because it's web-based there isn't a ton of procedures around it.   It's an internal document that is published or sent via e-mail. Buyers do have a desktop guide that is 10 pages long" (Raytheon).

My research fails to provide evidence that reform initiatives or FAR regulations would impede a more automated performance evaluation system. In fact, the FAR is not as restrictive as was hypothesized. Most of the guidance for evaluations comes from Air Force Materiel Command Contracting Division (AFMC/PK) or the Deputy Assistant Secretary (Contracting) of the Air Force (SAF/AQC). Much of the guidance is "lessons learned" from previous source selections (AFRL Interview).

Benefits and Contributions of Research

This research effort resulted in evidence to support the continuing push for improving the way we evaluate suppliers. These findings will be a source of information for AF/IL and headquarter personnel in their efforts to devise a scorecard system for the USAF. An external benefit of this research will also be to the companies that participated. They will be able to gauge their efforts in automating their performance evaluation systems with that of their competitors. The companies and program offices interviewed were extremely candid in their conversations with me and did not withhold information based on a concern that others might try to imitate them. Having said that, the benefits of automated evaluation systems seems positive in the eyes of purchasing/sourcing personnel.

The results of this study provide the USAF with more information which allows us to operate more and more like that of a profit-driven company. The bottom line is that we can not continue to spend a months and sometimes years to evaluate a potential supplier, we need a rapid capability that is more cost effective.

Limitations

The main limitation of this methodology deals with sample bias. The commercial company sample was chosen from the 2002 Fortune 500 "top 5" of the government and airline/transportation industries. The bias results in the aerospace emphasis that was placed on the study. Many of the USAF acquisitions are not aircraft related. Additionally, all of the firms that were interviewed were large businesses. The USAF does a significant amount of buying from small businesses without the IT infrastructure

that these companies have. The government bias stems from the sample being taken at Aeronautical Systems Center (ASC) at Wright-Patterson AFB. Each product center, depot buying activity, or operational unit has varying requirements. Aircraft program offices are buying aircraft, aircraft components, or modifications. Depots support the overhaul and spare parts operations, while operational units support the efforts for a particular base. This makes my study limited. Results of a study taken from a sampling frame can only be generalized to that sampling frame (Dooley, 2001:127). This makes it difficult to make generalizations directed towards an operational buyer who specializes in base services (e.g. cafeteria, lawns) when the research was focused on airline/transportation companies, government contractors, and government program offices.

A better situation would have been to interview commercial companies from various industries. This research was focused on companies or organizations in the aerospace industry. Interviews with a depot buying agency and an operational unit would also have strengthened my research.

Lastly, many of the respondents were asked open-ended questions with no time to prepare. Some of the information recorded during the interviews would have been more accurate had the respondents been sent the questions prior to the interviews. This was done to try and get the most honest answers from those participating.

Recommendations for Future Research

Future research should include a comparison of the actual scorecards that companies have utilized. In this study I received two scorecards, one from FedEx and one from UTC. If the USAF is going to implement scorecards it should obtain feedback on the

most and least desirable rating categories. Another recommendation would be to sample the suppliers that have scorecards on file with these companies. Although the companies felt that the suppliers welcome this type of rating system, it would be interesting to know if this holds true. Additionally, supplier qualification and certification plays a huge factor in establishing long-term relationships. The USAF is currently investigating ways to recognize superior performers without it resulting in favoritism for future acquisitions. Lockheed Martin's STAR supplier program seems to be an effective way of building pride in workmanship for its suppliers. Further research could focus on the "best practices" of various supplier award programs.

Based upon the results of this research effort, there is evidence to support the hypotheses that automation can be a positive enhancement to supplier performance evaluations. If this is implemented with the USAF community training will be required at the earliest stages of training for purchasing personnel. Familiarity and buy-in with the system will be critical in determining its success or failure (Boeing).

Additional Recommendations

Many commercial firms have establishing sourcing departments within their company. These departments are responsible for all major source selections. Based on the lack of experience that was discussed in the C-130 AMP Interview, I propose that a source selection office at a product center be more than just a support facility. This organization could become a "sourcing team". Theoretically, the same individuals that work the past performance portion for the F-16 avionics upgrade would work the past performance portion of the B-2 engine upgrade

Many suppliers in the automotive industry are held to the same process/quality standards as aerospace firms. Honeywell mentioned that many of these suppliers are no longer doing business with Ford or GM because of optimization (i.e. supplier reductions). These suppliers have many of the capabilities and resources that could be applied towards DoD efforts. It would be interesting to see if these companies could help alleviate some of the problems associated with the DMS (Diminishing Manufacturing Sources) challenge that the DoD currently faces.

Attachment 1

Note: Open Ratings calculates supplier performance scores using a sophisticated algorithm that takes into account the amount of information available on a supplier, the recency of the information, and the accuracy of the raters. Ratings range from 0 to 100, however, this is not a percentile score.
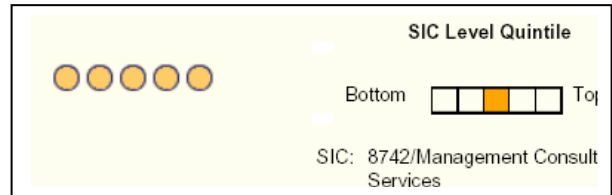
Summary Performance Rating
92
Indicative of likely overall performance
SIC Level Quintile
Bottom Top
SIC: 8742/Management Consulting Services

Detailed Performance Ratings
RELIABILITY:
How reliably do you think this company follows through on its commitments?
92
COST:
How closely did your final total costs correspond to your expectations at the beginning of the transaction?
92
ORDER ACCURACY:
How well do you think the product/service delivered matched your order specifications and quantity?
92
DELIVERY/TIMELINESS:
How satisfied do you feel about the timeliness of the product/service delivery?
93
QUALITY:
How satisfied do you feel about the quality of the product/service provided by this company?
94
BUSINESS RELATIONS:
How easy do you think this company is to do business with?
93
PERSONNEL:
How satisfied do you feel about the attitude, courtesy, and professionalism of this company's staff?
94
CUSTOMER SUPPORT:
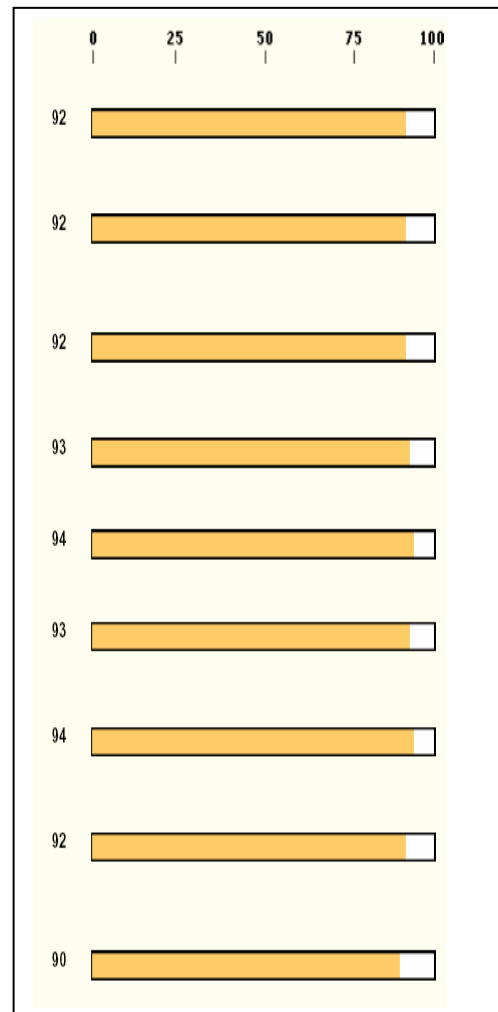How satisfied do you feel about the customer support you received from this company?
92
RESPONSIVENESS:
How responsive do you think this company was to information requests, issues, or problems that arose in the course of the transaction?
90

Source: (OpenRatings.com, 2002)

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Attachment 2

(source: UTC, 22 Feb 03)

Appendix A: **Interview Questions for Contractor/Program Office Personnel**

Guidelines: *The information obtained from this interview will be incorporated into the thesis without mentioning names of those interviewed. Any references made regarding the interviews will mention the company/program office and the individual's job title (e.g. contracting officer or program manager). Each interviewee must also give verbal permission for any use.*

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)?

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)?

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)?

4. Has your pre-award evaluation process changed over the last 5 years?

5. Have you been able to quantify any savings over the last 5 years with your evaluation process?

1C. What is your impression of the current DoD past performance and risk assessment?

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)?

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus?

8. Is the importance of price or financial performance tailored for each acquisition?

9. Is price the most important factor in evaluation?

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm?

2. Is the process automated or manual? What is the role of purchasing personnel in this process?

2C. What is your impression of third-party rating systems (e.g. OpenRatings)?

3C. If your process is automated, who designed the software or what third-party company maintains this database?

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)?

4. Does your evaluation after award affect award-fees or bonuses given for above average performance?

5. What factors do you perceive will affect the success or failure of a contract? *Examples include: Quality Management Practices, Documentation and self-audit, process/manufacturing capability, management of the firm, design and development capabilities, and cost reduction capabilities*

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award?

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract?

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now?

3. How much training is given in-house regarding supplier evaluations?

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately?

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)?

6. Would you characterize you relationships with suppliers short-term or long-term?

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures?

5C. Does your company do business in the aircraft or manufacturing industries?

6C. What regulations does your company have which outline the pre-award evaluation process?

USAF Program Office Personnel

Pre-Award Evaluation

1. What are the categories of assessment used for evaluating past performance? How were these categories constructed (i.e. USAF/AFMC Guide, DoD Past Performance Guide, from within)?

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance, technical performance)?

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)?

4. Has your pre-award evaluation process changed over the last 5 years?

5. Have you been able to quantify any savings over the last 5 years with your evaluation process?

1G. What is your perception of the FAR's restrictions on the pre-award evaluation process?

6. Does your office receive feedback from suppliers regarding past performance evaluation (e.g. source selections)?

2G. How many protests have you received?

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus?

8. Is the importance of price or financial performance tailored for each acquisition?

9. Is price the most important factor in evaluation?

Post-Award Evaluation

1. How is post-award evaluation maintained by the program office? Do you use USAF or AFMC guides?

2. What is the role of purchasing personnel vs. program managers in this process?

3G. If this process could be automated would it alter your perception of the DoD evaluation process?

3. How much time (hours, days, months) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)?

4. Does your evaluation allow for incentives if the contractor exceeds the requirement?

5. What factors do you perceive will affect the success or failure of a contract?
Examples include: Quality Management Practices, Documentation and self-audit, process/manufacturing capability, management of the firm, design and development capabilities, and cost reduction capabilities

4G. Does the program office currently maintain a performance file for each of its contractors?

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award?

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now?

3. How much training is given in-house regarding supplier evaluations?

4. Does your program office use multi-functional teams when performing pre-award and post-award evaluations or do different functionals (e.g. engineering, purchasing, marketing) act separately?

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)?

6. Would you characterize you relationships with suppliers short-term or long-term?

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures?

(Delta Airlines)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? We are talking about On-time Delivery, Lead-Times, Price history, Quality (incoming rejects), internal responsiveness (surveys) of the supplier. They were constructed within. We discussed this with suppliers and we use standard systems but it is probably common with other companies. Other than American Airlines we think we are the most comprehensive.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? Quantitative as much as possible. I'll give the delivery a score based on a spreadsheet. We have exceptions if something is late. Very quantitative.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? Let's take a case, the part is already designed by the OEM. I know the quantity. We might bring in a part on an evaluation basis. We might visit the supplier. The process could take 3 weeks but we kind of spread it out. It also depends on how urgent the need is.

4. Has your pre-award evaluation process changed over the last 5 years? I've only been here 3 and a half years, but not so much from a pre-award standpoint. We give suppliers on-going feedback. We've done some automation on how we collect and distribute information to supplier. That's been enhanced. More feedback to suppliers.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? We went through a 10% savings on on-time delivery. We measured that over a three year period. However, it's hard to put dollars to that. Most orders are for buying materials for stock. I wouldn't want to put a dollar figure on that. Not that I haven't tried.

1C. What is your impression of the current DoD past performance and risk assessment? My impression is that DoD does a very thorough job. It will take a lot of time and it will cost a lot. But it is upfront work. In contrast with Delta Airlines is that we should do more upfront work.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? I

get feedback informally. We don't have a formal mechanism for doing that. We've talked about that. We have trained suppliers on how we're going to measure them and the provide a little feedback. Our system is very complex. More complicated than you think it would be. Some suppliers take the time to understand our system and others don't.

7. Would you categorizes most of your contracts fixed-price, incentive based, or cost-plus? Mostly fixed-price.

8. Is the importance of price or financial performance tailored for each acquisition? It depends on the complexity of what we're buying. If we're buying a heads up display or electronics you're buying a design. If you're buying a design then price becomes less important. If you're buying a part then price is most important.

9. Is price the most important factor in evaluation? It is a factor but not most important in every acquisition.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? We have a scorecard process that we give to our top 50 or so suppliers in technical operations. We weigh them in on the categories discussed in the pre-award phase. We also have quarterly meetings with suppliers to talk about performance and what we need in the future.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? Through a fairly automated means I extract data out of a database. I assess on-time delivery, lead time, pricing, and one for quality. These are four spreadsheets. The buyer may or may not share this with the supplier before they score. We use an access database. The buyer will then create one spreadsheet out of this. The buyer has the ability to change that if they want. It is homemade programming and a lot of maintenance involved in keeping this system going.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? I'm familiar with that. It provides a useful data point but you wouldn't want to put to much confidence on it. We have been considering third-party systems and we decided not to use them. We are looking at a web-based system instead. I was out at Boeing last month and I understand that they are using something similar. With Boeing, they see themselves as a business that can supply information to the airlines. They're telling me how Rockwell Collins is doing, but I know how Rockwell Collins is doing. In the end, Boeing is not really in a position to inform Delta how one of our suppliers is doing.

3C. If your process is automated, who designed the software or what third-party company maintains this database? The system is homemade and was designed in-house.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? For the 50 main suppliers it takes a

buyer about a half hour. It is up to the buyer how often they report the scorecard information to the suppliers. Some suppliers want to see the information at the first of the month and others aren't to concerned. The minimum requirement is to give the suppliers quarterly data. The data comes in monthly buckets but is rolled up at the end of the quarter.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? They can, we have cases where assign penalties if a supplier doesn't meet a performance guarantee. We have at time set up penalties, but it is more the exception than the rule. We are trying to do more of this. What is more typical in the contract is that the supplier promises to participate in the supplier performance program in the future rather than penalize them.

5. What factors do you perceive will affect the success or failure of a contract? Effective communication of needs.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? Yes, we have a strategic sourcing process here at Delta. It is the selection of long-term opportunities for sourcing on a total cost basis. We are trying to capture this when we select suppliers. We have strategic sourcing department and we work with a third-party who has web-enabled this process. It is a seven step process on the web that steps the buyer to answer questions. It provides a permanent repository for results and in theory future buyers can leverage off of this.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract? It is across the board.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? We have to work harder at having objective decision criteria up-front. We talk about what we're trying to achieve but often we don't nail down the objective terms. We often select a supplier based on what feels right.

3. How much training is given in-house regarding supplier evaluations? Not very much at all. We have courses that are made available. A year or two back we wanted all the buyers to become certified purchasing managers. They went to six or seven days of training that covered a little bit of this.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? They're not likely to be physically located in the same office, but we do use multi-disciplinary teams. There tends to be supply chain leader and a business team leader. They draw in resources from other groups as needed. The supply chain guy is the only full time guy.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? For a $50M purchase that is pretty large. It's hard to say. 20 or 30 people wouldn't surprise me. I do $70M to $80M spend with Boeing. The designs are pretty fixed. There's probably a core of 6 to 10 people with this type of buy.

6. Would you characterize you relationships with suppliers short-term or long-term? Long-term.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? I can't answer that. We've started to in-sourcing over the last three years. Now, we're competitors with some of our old suppliers. Delta has pulled more stuff back in over the last couple of year.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? We have worked to establish some procedures. They are policy level guidelines on how we conduct business. Most of the business in technical operations are standard. In supply chain we really don't have standard procedures. We have to be careful to make sure we are using FAA approved suppliers. There is a set of financial policies in supply chain.

(Honeywell)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? If it's a brand new supplier, we're not going to have actual performance values for them. We won't know what their supplier quality performance, on-time delivery has been. We'll start off with a telephone interview. This is a general process, and varies from site to site. Number one we'll determine who they've done business with. We use open ratings to look the supplier up and look at their predictive performance in the area of financial risk and overall business performance. We look to see if that supplier is in poor shape financially or not performing well amongst their peers. Then I'll ask the supplier if they've been registered or certified to be compliant with certain aerospace quality standards. All Honeywell aerospace have adopted the America's Aerospace Quality Group and the International Association of Aerospace Quality Group standards. We have also used the FAA and DoD's quality standards. We are looking for AS 9100 and AS9120 if they're a distributor. Or we'll look at AS9003 if they're a manufacturer of simple parts or a distributor. We also use a MP3 which is a quick plant tour path assessment. Are they above average, average, or below average. The supplier will in a sense do a self assessment. They look at inventory management and how they manage financial systems. If you're an international supplier we ask for a virtual tour of their plant with a digital camera to take pictures. You get the boat load if you're building important products for us. If it's a simple part we'll scale down.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? It's really a mix. Twenty percent of our suppliers are doing business with other divisions of our company. The standards such as number of defects will vary If you are an automotive supplier or commercial supplier. For example, a casting or forging supplier will be hard pressed to get under 10,000 PPM for aerospace. It's hard to be all quantitative with quality because there are different industries.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? We've had regional conferences for international companies in Mexico to develop aerospace companies in Mexico. This takes a lot of upfront work. We've offered them packages to quote on. This process takes about 6 months. We have to very confident that global companies really understand the terms and conditions. This takes a little longer.

4. Has your pre-award evaluation process changed over the last 5 years? Oh, yes. It's much more in-depth. We have accelerated the number of auctions. Originally we invited suppliers that came recommended. We found that many suppliers weren't capable of meeting the requirement. We spend a lot more time up-front.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? Overall we are shrinking our supply base and improving the defect level and over the last two years there's probably been a 25% improvement in the quality level. Is that because we're managing suppliers better or selecting them I'm not sure. We've done a lot of stuff simultaneously.

1C. What is your impression of the current DoD past performance and risk assessment? Not directly. I have listened to informants speak about the process. Given your resource constraints, I like the process.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? FAA in their audits one of their biggest complaints is that the OEMs are not managing their suppliers very well. A year or so ago, they took Boeing to task. So Boeing kicked us. Historically, we have tolerated poor performance up and down the line. But we're getting healthy. When Boeing comes in now, people are much more responsive. If you want to do business with them we must comply.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? Fixed-Price. Boeing expects productivity improvement and price reductions. Some people also think that Honeywell is pretty mean. After 9/11, Boeing said they couldn't pay us. It took 90 to 120 days to make payment. We had to tell our suppliers the same thing.

8. Is the importance of price or financial performance tailored for each acquisition? Bottom line, price is the most important. If a supplier has their act together, by minimizing warranty costs, and delivering defect-free material, the price will win.

9. Is price the most important factor in evaluation? Within the aerospace business, quality is a must. Price is all that remains to discriminate based on the high standards of the industry. We have asked our suppliers to achieve a 6% reduction in their price.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? With new products we are looking for management capability, project plans, schedule targets, process capability, and first-article production. If we're buying a microprocessor from Intel they tell you when it comes to market. We don't have a lot of leverage with Intel.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? We use Microsoft Project as much as possible. We use NetMeeting and

electronic media to communicate with suppliers. We measure quality, parts rejects over parts received and on-time delivery. By next year we will have a web-based electronic scorecard.   On-Time Delivery is 5 days early or 5 days late. Productivity is kept-in house. Most of the procurement people don't want the supplier to know the productivity ratings. We're half way through a global system that will show us spend and ratings information by part number.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? We use them as a indicator or alert mechanism. If I'm a commodity manager of 75 suppliers, I don't have time to look at financials. OpenRatings lets me set up a watch list and it flags me. If I see that a supplier's performance against their peers is declining I can plan accordingly. We're using it as a early warning or heads up. We didn't buy their scorecard option. United Technologies is doing this, but not us.

3C. If your process is automated, who designed the software or what third-party company maintains this database? Other than open ratings, the evaluation system (scorecard) was designed in-house.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? This process is done monthly, quarterly, and annually.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? Our suppliers don't get incentives other than the opportunity to get more business with us. We do ask for discounts if we pay suppliers early.

5. What factors do you perceive will affect the success or failure of a contract? Number one I don't get the product on-time or it is delivered late, Number two the product doesn't meet specifications, and number three I don't meet my productivity goals.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? Strategic sourcing means leveraging our spend to get the best price from our suppliers.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract? We use report actual results for each division. By 2003 it will be a roll up to the corporate level.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? There have been times where a supplier does a self assessment which shows they're capable but in reality they can't meet the requirement. In a way we've often mislead the supplier.

3. How much training is given in-house regarding supplier evaluations? Honeywell requires 40 hours every year of training for everyone. What we're trying to do now is build the training into the business processes and into the curriculum for procurement personnel. We want the purchasing personnel to understand the preferred steps for selecting a supplier. We use what we call OneSource to drive the procurement. Our training is more process than specific functional training now.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? We use integrated product teams. It depends on the complexity of the product. If it is a major procurement the teams sits down and plans out a strategy. For simple purchases, purchasing and quality personnel might not have to discuss the matter. Most of the team members do not sit in the same work area and often are not in the same building or the same state. We also have commodity managers that are considered specialist for particular items.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? Right now, a $50 would be a strategic procurement and we would sign a long-term contract.   A commodity lead, a quality rep, and engineering rep. There will probably be 4 key people but it will touch a lot more people.

6. Would you characterize you relationships with suppliers short-term or long-term? Long-Term

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? The suppliers probably think on some levels that it has improved. Now, have we gotten any easier to work with, probably not. We're still very demanding and very impatient when it comes to not meeting objectives. We expect our suppliers to be agile and to share more of the costs. We expect them to help us manage the inventory. We've significantly increased the responsibility that we've placed on the suppliers.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? There is command media at each one of the sites/divisions that would describe the role of the quality personnel. At the strategic level we have common standards. There is general business guidelines and electronic training procedures.

(Raytheon)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? We look at on-time delivery internally to our own needs, quality in number of lots received vs. rejected, and a competitive benchmark. It is schedule, quality, and price. These are universal categories and an industry standard. On the direct side we have qualified suppliers where we only solicit those that are capable. I deal with LockheedMartin, Boeing, and UAE and our categories are pretty much the same.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? It's both quantitative and qualitative. We try to be factual but there are times when we must be subjective. When there is a SCAR (supplier corrective action report) we will work with the supplier to get them back up to speed. An example of a quantitative rating is number of lots vs. number of items rejected.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? For a $50M buy it usually takes us 60 to 90 days. We will fact find and do cost and pricing data.

4. Has your pre-award evaluation process changed over the last 5 years? We've gotten much more electronic and web-enabled. It's changed from a tool and process standpoint. We have a universal rating which is input and kept in a database to roll things up and can be seen across the company.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? Speed, Agility are inherent. We've certainly been able to deploy resources more strategically than tactically in terms of order placement. We can make decisions more quickly. I can't give you exact savings but I can say speed has been enhanced. It's more flexible when automated.

1C. What is your impression of the current DoD past performance and risk assessment? I think its fairly consistent with what we do. We have tried to mirror our process to match DoDs in some ways.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)?

When we talk to our suppliers, we try to talk to our key suppliers monthly. We try to benchmark them against their competition without them knowing who their competition is.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? 50% cost-plus and 50% fixed-price. Stable production contracts are fixed and development is cost-type.

8. Is the importance of price or financial performance tailored for each acquisition? Yes to a degree. It's not a scientific formula. We look at the prime proposal and the strategic suppliers. I don't think we have a lot of movement in how we do it. It's a 30/30/30 with a 10% management factor. 30% quality, 30% on-time delivery, and 30% price. If we know it's a price game we'll sharpen the pencil.

9. Is price the most important factor in evaluation? I don't think it's the most important. Historically, it has been pegged, however it's changed. We really try and emphasize best value. We're trying to communicate in any forum to our supply base. If I pay 10 cents less and I end up having to ship it back it becomes more expensive.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? This is pretty new. We've done some reorganization. The supplier ratings system is now being proliferated. If a contractor slips below a threshold of performance we shut them off. We put them on a probationary status. Our rating system is called SRS (supplier rating system).

2. Is the process automated or manual? What is the role of purchasing personnel in this process? Basically what happens is the process is automated. There is an incoming inspection loop or database that scores the supplier's performance. Once a product is shipped if it doesn't get rejected and if it is within a 5 day window then they are in compliance. For example, we don't pay a supplier if we receive an item more than 5 days before the due date. We are trying to maintain an inventory balance. The buyer does a query where the punch in the supplier code and it will download what they need for performance data. It can go back 6 months, 1 year, or even 2 years.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? I've heard of them. I heard it's pretty good. My reaction is that we're pretty big and have a lot of information technology in-house. It looks attractive but as upgrades become necessary it can become expensive. There's a lot to control. Even though they're a partner the third-party is in it to make money. We try to do a lot of things ourself rather than turn it over to someone else.

3C. If your process is automated, who designed the software or what third-party company maintains this database? We designed it ourselves but we had a little bit of help from PWC. They helped a lot.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? The process is semi-automatic. We have data people that load the information on a server. The buyers look at quality and delivery. This is done on a quarterly basis.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? If it's specifically tied to an award fee contract. Historical performance doesn't really matter, but if we tied it to a contract and they achieved a certain threshold they would be paid.

5. What factors do you perceive will affect the success or failure of a contract? Early involvement by the supply chain is extremely important. It allows us to do risk mitigations. We have a MPP (Material Program Plan) that allows us to look at obsolescence. The biggest factor in risk is getting suppliers involved early. In the production area a problem is asking a supplier to produce at too fast a rate or asking for a difficult delivery date.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? Strategic sourcing is clearly the make or break part of a program. I've got groups here that go buy material for a number of different applications. The whole element of strategy is getting a differentiator among suppliers. The folks that I buy the most from and are make a difference should be brought in early. We want to partner or team with these folks. Additionally, I've got to get the right skill set internally. I need the right people in-house. The key to our operation is understanding who exactly a strategic supplier is. Who should we link with is very important.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract? We have both. We have a composite that rolls up total performance. We then have a menu that gives us performance on a particular contract. Our chairmen loves it because he was very interested to know how he was doing when he was a supplier. He wants us to give this information to our supplier.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? We always worry about solvency, viability financially, and we are worried ethics. Ethics is becoming significant in pre-award and after-award. We have a material program manager role to link the program office and the supplier. And again, early involvement to find out if the supplier can meet the specification or get all the parts they'll need.

3. How much training is given in-house regarding supplier evaluations? We have pretty focused deployment teams of subject matter expects (SME) that went out to deploy the system. We used quality, engineering, and supply chain personnel to get the word out. It helps the buyer to have tools to assess performance. We spent 2 days of training (16

hours) so that the personnel understand the integrity of the data. We use an access database.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? We call it an IPT. The bigger programs (DDX) naval program of a stealth ship with munitions on it, the IPT sit in the same building. Other programs have a program office, there might be a supply chain person that reports out of their home office. The best situation is one you sit people together. The decision making is real-time. There's no replacement for having people co-located.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? I would probably say 15 people. You'd have supply chain, finance, legal, program office, quality, field folks located near suppliers to conduct a capability survey, and engineering. Probably between 12 and 15 people.

6. Would you characterize you relationships with suppliers short-term or long-term? I think they're long-term. We're trying to rationalize and characterize our supply base. We do business with too many folks. We have a cool tool called spend analysis. We know who we spend money with. We know by program code and commodities where we spend. I think the way to get better long-terms relationships is to get people the tools that steer them towards the agreements. PWC helped us with the SAT (spend analysis tool). If we're bidding on a job in Trent Lott's district we can drill down by zip code and figure out who we buy stuff from and how much. We can report how much money will be spend in that district.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? Very much so. There's a dispute avenue if suppliers object to the way we rate them. It heightens the awareness beyond just cost.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? Because it is web-based there isn't a ton of procedures around it. It's an internal document that is published or e-mail. It's pretty much navigation. They have a desktop guide that is 10 pages. Initial training is pretty focused.

(Boeing)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? We look at quality, acceptance rate, on-time delivery and we look at customer satisfaction.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? Our system is quantitative in terms of quality, acceptance rate, on-time delivery. It is subjective or qualitative, if you will, in terms of customer satisfaction.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? It's hard to say.

4. Has your pre-award evaluation process changed over the last 5 years? Not significantly, just in that much of our rating system has been automated.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? Nothing that we can pinpoint.

1C. What is your impression of the current DoD past performance and risk assessment? I think DoD does a good job. It is extremely thorough and in most cases fair. Obviously, it is very expensive, but understandably so in terms of the magnitude of some of the programs.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? Yes, they submit feedback within our system.

7. Would you categorizes most of your contracts fixed-price, incentive based, or cost-plus? I would categorize most of our contract as fixed-price.

8. Is the importance of price or financial performance tailored for each acquisition? Yes, the importance of price depends on the complexity of the buy. If we are buying OEM parts then price is most important. If we are developing a new system then we are looking at total cost. This includes ownership, maintenance, and quality concerns.

9. Is price the most important factor in evaluation? No

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm?
We rate suppliers on their performance on specific procurement and we give them a rating across the board. It lets them know how they're doing.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? The process is semi-automated. The database requires manual input, but the output can be pulled automatically. Purchasing's role is very limited. They simply retrieve information when they need it to assess a supplier's capability.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? I wouldn't feel comfortable putting all my decisions in their hands. I have a lot of confidence in the system we have developed in-house.

3C. If your process is automated, who designed the software or what third-party company maintains this database? We developed the software in-house.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? Not much time is required. I would say 30 minutes to compile the data. The information is then compiled into a 12 month moving average for each site. It is a monthly rating.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? I'm not sure if it applies.

5. What factors do you perceive will affect the success or failure of a contract? Process Capability is critical. We are also extremely concerned with how a supplier manages their sub-tiers. We often find that this is the most common reason for a supplier experiencing delays.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? We have a strategic sourcing function at Boeing. I would say that is how an organization manages their suppliers. It is the ability to find out who your suppliers are and to determine who is a good supplier. Finally, I would say that strategic sourcing is helpful in determining whether you make an item or do you buy it.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract? Our ratings cover all contracts. It is a roll-up. We are investigating ways to break it down to each individual contract at this time.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? We could stand to improve our preferred supplier program in house. The system needs to be institutionalized.

3. How much training is given in-house regarding supplier evaluations? We give 3 and half to 4 hours of pre-award training on source selections. We also give 4 hours of training to cover the preferred supplier program. This addresses the post-award phase.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? Yes, we do have an IPT. It is a matrixed structure. Especially if they're involved in a source selection.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? This will vary. 7 people if I had to say off the top of my head. They're from different functions.

6. Would you characterize you relationships with suppliers short-term or long-term? I would like to think that our relationship has improved. The fact that we have preferred supplier process and a rating system in place it has helped improved supplier relationships. Our development program of suppliers has received feedback that we work well with our suppliers on the military side. I can't speak of the commercial side.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? I think it has improved. The suppliers feel that we are fair. On the commercial side I think it's just the opposite. McDonnell Douglas had a history of working with suppliers as partners. There is a heritage there.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process?   We have PROs (Enterprise procedures) that people are trained on. We have PRO for supplier performance measurement. The PRO number is 3275. We have another PRO for supplier certification 1113 is 9 pages.   We have a PRO for source selection. We have a PRO for strategic sourcing that is approximately 7 pages. All of these PROs help us to document what our process is. It helps us to train our people accordingly. Typically, a PRO should only be 2 pages. But if you're trying to get it across all of Boeing, you need to cover various scenarios.   Most are under 30 pages.

(United Air Lines)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? If it's a new supplier for example computer products: I know we'll need 6,000 for airport stations. The people in information systems have a role, the people in purchasing have a role, the users have a role, and the managers will decide. When I choose a new company I want a know they're financially viable, if they have on-time delivery, their proximity, and technical performance.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? There is both. Price is quantitative. The location of the supplier and responsiveness is qualitative.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? United Airlines is one of the largest telcomm users in the world. A telcomm bid could take 8 months. A bid for plastic products (polybags—for skis and golf clubs) was done reverse auction and completed in 1 afternoon, although the specifications were clear up-front. It depends on the complexity of the buy.

4. Has your pre-award evaluation process changed over the last 5 years? I would. It used to be the best price. It is no longer like that.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? We have saved money by reverse auctions. People are able to go down lower in price with reverse auctions and competitions become intense. We are now looking at overall costs of maintaining the item.

1C. What is your impression of the current DoD past performance and risk assessment? My first impression is the $400 toilet seat or the $200 hammer. It is very difficult to deal with DoD at times. There is some companies that do not want to deal with DoD because of the administrative burden.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? In all honesty a lot of times the people that don't get the business, we are reluctant to give them that information. The reason is that I want to get that buy completed. The last thing the buyers want to do is get in to great detail as to why they didn't win the bid.

7. Would you categorizes most of your contracts fixed-price, incentive based, or cost-plus? Fixed-price and cost-plus arrangements, I have a cost-plus contract with Hewlett-Packard for personal computers.

8. Is the importance of price or financial performance tailored for each acquisition? Yes. On polybags or cans of coke price is especially important. But, when I'm dealing with a service price is not the most important.

9. Is price the most important factor in evaluation? Depends on the complexity. The initial price might be fine, but if I'm having cans of coke delivered from California to Illinois I'll get killed on shipping.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? Unfortunately to some extent a lot of times I don't even know when a delivery hasn't been made because of a buffer stock in the Denver warehouse. There's other items such as headsets from China, we have to worry about the efficiency in getting us the delivery, I don't think we do statistical analysis, but I do believe the individual buyers manage their purchases. I do know that we look to see that invoices are correct. I attended a briefing by Hewlett Packard in Grenoble, France. The person in charge was using a supplier ratings system.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? It is a manual process. I know that Dell is doing the automated supplier ratings. They want their suppliers right next door so they can track them. The purchasing role is informal. It gets back to the end user buying the product. If I'm not hearing complaints from them, I know that they're satisfied.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? I have heard of OpenRatings. We do not use a system like that. I think in different financial conditions I would absolutely look at this. It would make my job easier.

3C. If your process is automated, who designed the software or what third-party company maintains this database? We do have a system from Peregrine for asset tracking. The system can do this. I just don't know if we are using this system to its full capability.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? It is not done.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? No rating system.

5. What factors do you perceive will affect the success or failure of a contract? Management of the supplier is extremely important. Often times the supplier has free

roam to your user, the user becomes pre-disposed and your hands are tied by the specification created. The requirement should be clearly defined up-front.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? That's what our department is called. It gets into the issue of how purchasing has changed, it essentially looking at more than price. It means establishing long-term relationships that create long-term value for the company. It applies before and after award.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract? No ratings. Our company has that Perigrine system that has the capability to run the reports to see that this product was received on this date. However, we haven't used it long enough to know how successful its been. If I had the system I would want to know on a particular contract. When I deal with a company like IBM or Hewlett-Packard for something like EZ Pass (Electronic Boarding Pass) I would want to know what IBM division actually did the EZ Pass and how well they did. Our suppliers have many different divisions and locations.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? I would try to make sure the specifications are more clearly defined.

3. How much training is given in-house regarding supplier evaluations? We give each new employee 8 hours of training and there other classes to teach purchasing agents about negotiation, software, and legal issues that amount to 40 hours per year.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? Yes we use multi-disciplined teams that all work in the same building.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? If we had a $50M buy, I would assume that there would be about 8 core individuals involved in the buy.

6. Would you characterize you relationships with suppliers short-term or long-term? We certainly hope and expect that our relationships are more and more long-term.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? Our relationships have improved.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? We have a very thorough set of regulations. They explain the agreements that are in place. We use web regulations that are probably 100 pages in length. However, only 15 pages of that are purchasing specific.

(UTC)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? We have 8 factors we look at. We look at their delivery, quality, financial performance, lean manufacturing initiatives, engineering initiatives, manufacturing capabilities, manufacturing capacity, and open ratings.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? The ratings system is both. The Quantatitve is delivery, quality, and financial/cost competitiveness. The Qualitative is lean manufacturing initiatives, engineering initiatives, manufacturing capabilities, and manufacturing capacity.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? It depends on how motivated we are. I would say for a $50M contract would be 6 to 9 months.

4. Has your pre-award evaluation process changed over the last 5 years? Not significantly. We've automated things but we're evaluating the same criteria.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? $1B Savings on the product side to Wall Street through 2001. On the non-product side we are on track for a $700M savings by the year 2004.

1C. What is your impression of the current DoD past performance and risk assessment? No impression of the government.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? Yes, they call us they e-mail. They work through their commodity manager or their management. If suppliers get good ratings we don't hear from them, if they get bad ratings they'll contact us.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? Fixed-Price with regressive clause that decreases the cost each year after.

8. Is the importance of price or financial performance tailored for each acquisition?

Yes, financial performance and cost of the product is a key driver. If we're looking at buying 10,000 screws the price is most important. If we're buying an engine we're less concerned about price but more concerned about the future investment.

9. Is price the most important factor in evaluation? My personal opinion is no. The corporate by line is probably yes.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? We have a monthly scorecard that is published on the website. All of the six divisions at UTC roll up their receipts for their suppliers and it is consolidated at corporate. The scorecard contains quality and delivery information only.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? It's a combination of both. It's automated out of the business units but it's a manual effort to consolidate it. We have a lot of legacy systems still. Purchasing is the first line of defense for phone calls, they don't play a role in getting the data published.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? Very good. We leverage it internally. When we look at performance there are different pieces we look at. There are some things we don't have access to. The Dun & Bradstreet information from OpenRatings is very helpful. We don't put 100% faith in OpenRatings but we do use it quite significantly to drive internal activities.

3C. If your process is automated, who designed the software or what third-party company maintains this database? Home grown system managed out of our Supplier Quality Organization.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? Pulling the data at the division level is automated. The information is automatically taken from the purchase order, it includes delivery, quantity, and inspection information. When the information reaches the corporate level the roll-up it takes minimal time to roll-up.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? We don't give bonuses although we give plaques to recognize good suppliers.

5. What factors do you perceive will affect the success or failure of a contract? We find that we have the most success with suppliers that practice Lean Manufacturing. Failure is often found with companies that give the best price but don't necessarily have the capability. That is probably because we've given them an impossible challenge. It could be bad drawings and bad specifications.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? Strategic sourcing consists of commodity management teams responsible for the strategic direction of the supply base. The goal is to establish as much commonality between the divisions. The products are often similar and can be consolidated to create a common approach. We want to work with strategic partners.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract?
We have a scorecard that allows you to see a roll-up for all contracts. We can get to the data individually but we don't look at it that way.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? We could improve in how we collect data. Our legacy systems need to be upgraded. We are trying to determine who it is that we spend what with. We could also do better in supplier evaluations.

3. How much training is given in-house regarding supplier evaluations? It is a 2 day 16 hours of training that discusses the 8-step sourcing process. We offer them additional training called Achieving Competitive Excellence (ACE). It consists of lean manufacturing principles. On average people receive 16-24 hours of training.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? Yes, our commodity teams are cross-functional. Procurement, Quality, Finance, Manufacturing Engineering, and Design Engineering.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? I would say there are 4 to 8 core people from each functional and 4 to 10 people used for support.

6. Would you characterize you relationships with suppliers short-term or long-term?
Long-Term

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? Our relationship really hasn't changed. The OpenRatings systems that is coming out online the company will self evaluate. We expect this to be positive.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? The 8-step sourcing process guide is approximately 10 to 20 pages long.

(C-130 Avionics Modernization Program)
USAF Program Office Personnel

Pre-Award Evaluation

1. What are the categories of assessment used for evaluating past performance? How were these categories constructed (i.e. USAF/AFMC Guide, DoD Past Performance Guide, from within)? We essentially used the CPARS Structure. It includes Technical Performance, Program Management, Subcontractor Management, Systems Engineering, and Cost Performance on relevant contracts.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance, technical performance)? The rating system is extremely qualitative. We made every effort to remain subjective. Objective ratings are hard to define in the request for proposals and this was common to most source selections and in accordance with SAF/AQC guidance.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? For our effort the program was approximately $2B to $3B. The process took more than a year. I would say for a $50M effort you could expect it to take 6 months to a year from start to finish.

4. Has your pre-award evaluation process changed over the last 5 years? Not significantly. The source selection process includes the same information.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? No, in fact the acquisition process is more focused toward up-front work.

1G. What is your perception of the FAR's restrictions on the pre-award evaluation process? Not all that restrictive on past performance. Most of the guidance that we use for source selections comes from command and AQC.

6. Does your office receive feedback from suppliers regarding past performance evaluation (e.g. source selections)? Yes, we received feedback during de-briefings prior to award. The contractors competing for the effort knew where they stood regarding past performance prior to the final de-brief.

2G. How many protests have you received? No protests were received on this effort, although protests do occur rather frequently when so much is at stake. I think in this effort, the contractors were hesitant to protest as the Joint Strike Fighter was upcoming.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? Mixed, but a majority of our efforts in the systems environment are cost-plus type arrangements. Years ago there was a push to go fixed-price, but that seems to have changed.

8. Is the importance of price or financial performance tailored for each acquisition? Yes, it is usually a mix between cost, technical, and past performance factors. It is difficult to assess how important cost is on each evaluation. I can say that it is more likely to be a discriminator than past performance. In our case though, I think past performance made a difference.

9. Is price the most important factor in evaluation? No, the weights of cost, technical, and past performance vary from source selection to source selection.

Post-Award Evaluation

1. How is post-award evaluation maintained by the program office? Do you use USAF or AFMC guides? It is a formal process driven by leadership. There are typically IPT's that cover each area of the award fee. It is a very subjective and time consuming process. We try to remain subjective as opposed to objective because often times the objective areas will be the only areas to improve. I remember Gen. Kadish under the C-17 program as saying, we want to keep it subjective for this reason. I think it worked well.

2. What is the role of purchasing personnel vs. program managers in this process? The contracting officer oversaw adherence to the contract stipulations. However, it was clearly the program manager's responsibility to carry out the award fee evaluation.

3G. If this process could be automated would it alter your perception of the DoD evaluation process? Theoretically you could automate the scoring. But if you did you would kill the fundamental benefit of communication between the teams.

3. How much time (hours, days, months) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? I would estimate that the award-fee reviews take in excess of 100 man hours. In my programs, I have seen Video Teleconferences that are conducted every 3 months. I would also expect 6 month reviews that include briefings to the contractor. This VTCs require 20 people and the there are various meetings and TDYs which consume 8 program and contractor personnel for about 1 to 2 days per month.

4. Does your evaluation allow for incentives if the contractor exceeds the requirement? Yes, if we have a cost-plus incentive fee arrangement.

5. What factors do you perceive will affect the success or failure of a contract? I would say that the biggest factor of any program's success or failure is how well the government and contractor team communicates. That relationship is often the most important.

4G. Does the program office currently maintain a performance file for each of its contractors? Only for programs that have award-fees. We also have CPARs ratings for some system contracts. However, we are only capturing files contract by contract. I would like to see an overall roll-up so that we could assess Boeing's St. Louis division. Currently, there is no means for doing this.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? Not heard of the term, but it would say it's sourcing at the higher level. I would think that it would mean building systems around common platforms. I'm currently involved with the UAV systems. Essentially, we have the same guts that can be modified or upgraded rather easily.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? Get involved with DCMA at the earliest possible date prior to a source selection. They know how one particular division is performing.

3. How much training is given in-house regarding supplier evaluations?
An hour of training is given prior to source selections. I do not know of any specific training which addresses supplier evaluations. I would assume its taught at the initial acquisition courses. What frightens me is that many of our senior acquisition officials at the product center have never been involved in a source selection and as a result they don't have the experience. There are people that they can go to for a advice, but we need more experience within the program offices.

4. Does your program office use multi-functional teams when performing pre-award and post-award evaluations or do different functionals (e.g. engineering, purchasing, marketing) act separately? Yes, we use the matrixed approach. Many functional experts are now sitting together. This seems to work well.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? I would say 20 people for a $50M program. Our C-130 AMP program had 60 to 70 people.

6. Would you characterize you relationships with suppliers short-term or long-term?
I would said the relationship with major primes is long-term. However, we don't have any relationship with subcontractors.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? We've lost the ability to seek out new suppliers. We are becoming more and more dependent on our prime contractors. Overall, though, our relationship with our current suppliers has probably improved as the number of debriefings of their performance has increased.

USAF Program Office Personnel (AFRL Enterprise Buying System)

Pre-Award Evaluation

1. What are the categories of assessment used for evaluating past performance? How were these categories constructed (i.e. USAF/AFMC Guide, DoD Past Performance Guide, from within)? We assess management, technical, functionality, operations and sustainment, and cost performance in general. These criteria were constructed from related programs.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance, technical performance)? Mixture of both. We use questionnaires on source selections and often times we make the Likert Scale quantitative. The comments are qualitative and are considered subjective.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? I would say that from start to finish it takes 6 months to a year.

4. Has your pre-award evaluation process changed over the last 5 years? I would say that the PRAG process has more structure that it had 5 years ago. There are guides that you can use.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? No

1G. What is your perception of the FAR's restrictions on the pre-award evaluation process? I don't feel restricted by the FAR. Most of the procedures aren't in the FAR. The policies usually come out of headquarters for a source selection.

6. Does your office receive feedback from suppliers regarding past performance evaluation (e.g. source selections)? Yes, contractors are able to give us feedback during the debrief.

2G. How many protests have you received? We did not receive a protest on the Enterprise Business System. But yes, we do get protests on other source selections.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? I would say that AFRL does predominantly research contracts. Most of our contracts are cost-type. However, this effort was a mix of fixed-price and cost-plus.

8. Is the importance of price or financial performance tailored for each acquisition? I think cost is highly important. It is often not the most important, but if the requirements are well defined, it should be.

9. Is price the most important factor in evaluation? No, I would like to say that we use the best value approach. This meaning that technical performance, cost performance, and past performance are considered.

Post-Award Evaluation

1. How is post-award evaluation maintained by the program office? Do you use USAF or AFMC guides? Under the science and technology arena this process is very informal. This makes it hard to compare suppliers down the road.

2. What is the role of purchasing personnel vs. program managers in this process? Most of the purchasing personnel will play an administrative role. They are there to ensure that reports are received on time.

3G. If this process could be automated would it alter your perception of the DoD evaluation process? I would say that there is a lot of information that can not be quantified in an automated rating. Subjective ratings can be a good thing.

3. How much time (hours, days, months) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? I'm not sure that this is really done for science and technology contracts.

4. Does your evaluation allow for incentives if the contractor exceeds the requirement? Very little incentives are included in our contracts. However, that sort of thing goes in cycles.

5. What factors do you perceive will affect the success or failure of a contract? Overall, I would say the contractor management is most important. You can tell if the contractor is on top of things.

4G. Does the program office currently maintain a performance file for each of its contractors? No, not currently.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? I'm not exactly sure what it means. I know headquarters mentions it during meetings, but it hasn't filtered down.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? Got an earlier start. We should have put the questionnaires in the request for proposal. Additionally, the criteria we are assessing should be more aligned to the questionnaires.

3. How much training is given in-house regarding supplier evaluations?

A couple of hours of training is given on EZ Source. This is a software program that aid the source selection team.

4. Does your program office use multi-functional teams when performing pre-award and post-award evaluations or do different functionals (e.g. engineering, purchasing, marketing) act separately? Yes, we use the IPT approach.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? For our program, which was $15M it took 15 to 20 people about 6 weeks to fully evaluate the suppliers.

6. Would you characterize you relationships with suppliers short-term or long-term? I would say it's a mix. An example of a long-term supplier in the labs is in the propulsion division. An example of short-term is the Small Business Innovative Research (SBIR) contractors.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? I would like to think that it will improve based on the feedback we give during debriefings. However, those that do not win are often more upset and do not understand the process.

(FedEx)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? We use a scorecard system that evaluates price trends, services, financial performance, on-time delivery performance, certification, reporting, invoice discrepancy rate, receipt discrepancy rate, cycle-time performance, and globalization capability. It was designed from within.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? On-time delivery is quantitative as well as discrepancy rates, cycle-time performance, and financial performance. The rest are quantitative.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? $50M contract would take 5 or 6 months.

4. Has your pre-award evaluation process changed over the last 5 years? The process has changed to include more cross functional leads and towards a supply chain management focus. We are also engaging more diverse (minority) suppliers.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? We have quantified a 5 to 10% savings using reverse auctions with E-sourcing. We are involved in a program called AeroExchange that manages the auctions for us.

1C. What is your impression of the current DoD past performance and risk assessment? No impression of the DoD past performance process.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? We do not receive much feedback from other partners. We try to be as clear as possible with our scorecard system.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? Fixed-Price

8. Is the importance of price or financial performance tailored for each acquisition? Yes, the weight of price depends on the strategic importance of each buy.

9. Is price the most important factor in evaluation? In most cases it is, but 40% of weighting is assigned to support services.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? There are two levels of management. We have Supply Chain Specialists who own the process from cradle to grave. We also have sourcing managers who own the larger contracts. They produce ratings on a monthly basis via a scorecard on each supplier. Additionally, there is a supply management specialist (SMS) who maintain a portfolio on each company. Overall, planners and buyers are consolidated to manage the supply chain focus. We seem to have lost some intelligence about the buying side by consolidating the buying and planning functions.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? A Little of both. The number of purchase orders that are delivered on-time is automated. There is still manual manipulation of data when discrepancies are discovered. It takes purchasing 30 minutes to an hour to get data. If there are discrepancies it can take much longer.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? I don't feel that I would be able to trust the data as much as the data of our own systems. AirBus does this but doesn't also have great data.

3C. If your process is automated, who designed the software or what third-party company maintains this database? The scorecard system was built in-house and is posted on the website.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? It takes a couple of minutes. The time required is generally associated with data retrieval.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? There are some incentives if contractors perform exceptionally well on the scorecard. It depends if it is included in the contract terms.

5. What factors do you perceive will affect the success or failure of a contract?
Examples include: Quality Management Practices, Documentation and self-audit, process/manufacturing capability, management of the firm, design and development capabilities, and cost reduction capabilities: There are two things. First, quality is a huge emphasis at FedEx. We must ensure that the product is delivered and is acceptable. If not we have to deal with refunds or repairs. The second item is service related. When companies are bought out or merge with other companies it can cause problems down the road.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? It is making sure that you identify your requirements up-front and early. It also includes optimizing you supply base to decrease the number of suppliers that you partner with. Yes, it applies before and after award.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract? We have one rating for each contract, however, we roll-up score cards if the company has several divisions.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? Make sure the source of supply a little more in-depth.

3. How much training is given in-house regarding supplier evaluations? New employees receive 40 hours of training each year. After that employees receive 20 hours of training per year.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? Yes, we use integrated product teams when evaluating suppliers.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? I would say there is a core team of about 6 to 8 people when performing an evaluation for a $50M effort.

6. Would you characterize you relationships with suppliers short-term or long-term? Our relationships are becoming more and more long-term.

7. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? The suppliers like our scorecards. It provides them feedback on a more consistent basis. Our suppliers are now asking that they be able to fill out a scorecard on us.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? There is a formal request for proposal guide which is 30 pages long. Other information can be found on the website.

(Lockheed Martin)

Interview Questions for Contractor/Program Office Personnel

Contractor
Pre-Award Evaluation

1. What are the categories/factors of assessment used for evaluating past performance? How were these categories constructed (i.e. industry standard, from within)? We assess quality, delivery, affordability, and management. This was determined from within.

2. Is your rating system quantitative (e.g. late delivery in terms of # of days) or qualitative (e.g. quality performance)? Quality and delivery are quantitative. Affordability and management are qualitative. Quality and Delivery information is e-mailed directly to the supplier on a monthly basis. The qualitative information is sent semi-annually. It is sent electronically in a performance feedback report to 225 major suppliers.

3. How many days on average does it take you to award a contract (e.g. clock starts when a requirement or funding document is received)? I can't answer that.

4. Has your pre-award evaluation process changed over the last 5 years? The process is generally the same with the exception of the rating systems.

5. Have you been able to quantify any savings over the last 5 years with your evaluation process? Can't answer that.

1C. What is your impression of the current DoD past performance and risk assessment? No impression of the DoD past performance process.

6. Does your company receive feedback from other business partners concerning your own past performance evaluation (e.g. how you are perceived or rate with other firms)? We receive feedback from them at our annual supplier conference. This consists of our strategic suppliers.

7. Would you categorize most of your contracts fixed-price, incentive based, or cost-plus? Not for certain.

8. Is the importance of price or financial performance tailored for each acquisition? Yes, because we are now moving to a best value approach. We use reverse auctions but they are still best value.

9. Is price the most important factor in evaluation? No.

Post-Award Evaluation

1. How is post-award evaluation maintained by your firm? We use the ratings that compile on each supplier and we use them for future award determinations. We have a STAR supplier program to recognize excellent performance from suppliers. It is a type of award that most suppliers are proud of. There is also a Supplier Performance Evaluation & Action Response (SPEAR) program to help suppliers recover or get them up to speed.

2. Is the process automated or manual? What is the role of purchasing personnel in this process? A good portion of it is automated. The monthly portion of quality and delivery feedback is automated via e-mail. The semi-annual data is somewhat manual. The buyers complete a web form to fill out the quantitative information.

2C. What is your impression of third-party rating systems (e.g. OpenRatings)? The system at Lockheed Martin is already so automated that OpenRatings would not provide much benefit. I feel that OpenRatings would provide that most benefit to a small company that doesn't have the computer programming resources of a large firm such as Lockheed Martin.

3C. If your process is automated, who designed the software or what third-party company maintains this database? The software was designed internally using some COTS software. It took about a week for a team of experts within the company to design it.

3. How much time (hours, days) is required to complete a post-award evaluation? How often is it performed (never, monthly, quarterly)? The monthly reports take about 30 minutes to complete. The semi-annual reports take awhile to compile but to batch the information requires about 30 minutes.

4. Does your evaluation after award affect award-fees or bonuses given for above average performance? It depends if it is included in the contract terms and the ratings certainly won't be the only consideration given.

5. What factors do you perceive will affect the success or failure of a contract? *Examples include: Quality Management Practices, Documentation and self-audit, process/manufacturing capability, management of the firm, design and development capabilities, and cost reduction capabilities:* Subcontracting Management. Lockheed Martin is pushing its suppliers hard to manage and rate their suppliers.

General Questions

1. How would you describe/define strategic sourcing? Does it apply before and after award? It is not a formal partnership with suppliers but a level of trust in working together. It also involves stratifying the supply base by top level managers.

4C. Do you maintain one rating for each supplier which covers all contracts or are they given a rating which is based on their performance on one particular contract?   It is an

overall rating for a particular supplier. But it can be broken down by program to describe the details of one particular effort.

2. What 3 things could you have done better in pre-award and post-award evaluations knowing what you know now? Better control or management over our supplier's suppliers (subcontractor management). They are often the reason for a delay.

3. How much training is given in-house regarding supplier evaluations? There is 3 hours of training given to new employees which depicts evaluation procedures at Lockheed Martin.

4. Does your firm use multi-functional teams when performing pre-award and post-award evaluations or do different departments (e.g. engineering, purchasing, marketing) act separately? Yes, we use integrated product teams when evaluating suppliers.

5. How many individuals typically participate in a pre-award or post-award evaluation (i.e. $1M, $50M, & $100M+ acquisitions)? It depends.

6. Would you characterize you relationships with suppliers short-term or long-term? I would say that they are long-term.

6. Has your relationship with your suppliers improved or suffered because of your evaluation procedures? The suppliers like our rating systems. They will ask questions if our e-mails are late.

5C. Does your company do business in the aircraft or manufacturing industries? Yes

6C. What regulations does your company have which outline the pre-award evaluation process? There are buyer checklists on the web to ensure that each buyer follows the same process.

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Vita

Captain Michael E. Knipper was born in Pensacola, Florida. He graduated from Picayune Memorial High School in Picayune, Mississippi in 1988. In 1993, he graduated from the United States Air Force Academy with a Bachelor of Science degree in Political Science. His first assignment was to the 81st Operational Contracting Squadron at Keesler AFB, Mississippi. While there he served as a buyer in the construction, commodities, and services branches. In 1995, he was assigned to the Reconnaissance program office at Aeronautical Systems Center at Wright-Patterson AFB, Ohio. While there he worked as a contracting officer for USAF F-16 reconnaissance programs and German and Korean foreign military sales efforts. In 1997, he was selected to serve as the executive officer for the Director of Contracting at Aeronautical Systems Center. In 1998, he was selected for the Air Force Logistics Career Broadening Program. He was assigned to the Ogden Air Logistics Center at Hill AFB, Utah. While there, he worked as a program manager for C-130 and C-141 landing gear and served as the deputy branch chief for the Air Force Hydraulics shop. From 2000-2001 he served as the Performance Risk Assessment Group chief for the $1B+ western ranges technical services contract. In this role, he was selected as the 2001 Welch award winner for USAF acquisition excellence. Captain Knipper entered the school of Engineering and Management at the Air Force Institute of Technology in August of 2001.

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14. ABSTRACT

The US Air Force has determined that improving the way we manage our supply chain is key to reducing operating costs and subsequently providing better support to the warfighter. One method of improving supply chain management is to streamline the way suppliers are evaluated. This study compared the efforts of private industry with government program offices in terms of supplier evaluation techniques. The expert panel from private companies was identified because of their association with the aerospace industry. Government employees were identified because of their recent contract pre-award and post-award experience. Input was received through the use of open-ended interview questions and was later analyzed for content. Pattern matching analysis was used to determine the best practices of private and government entities and to determine the differences between government and private industry in terms of their supplier evaluation techniques. The findings of the study did not mention the names of those interviewed but rather the organization they were associated with.

15. SUBJECT TERMS

Evaluation Factors, Supplier Performance Measures, Automated Ratings, Past Performance Evaluations, Performance Risk Assessment Group, Award-Fee Contracts, Long-Term Relationships, Strategic Suppliers, Purchasing and Supply Chain Management, Supply Chain Management

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